THE INSTITUTION
OF ELECTRICAL
ENGINEERS

IEE Proceedings

Vol. 130, 1983

Published by
The IEE, Savoy Place, London WC2R 0BL, England
Publishing Department: PO Box 8, Southgate House, Stevenage, Herts. SG1 1HQ, England

IEE Proceedings

The Institution of Electrical Engineers, Savoy Place, London WC2 OBL, England.
Publishing Department: PO Box 8, Southgate House, Stevenage, Herts. SG1 1HQ England

Volume 130 1983

The *IEE Proceedings* is published in nine Parts, as follows:

Part A: Physical Science, Measurement and Instrumentation, Management and Education, Reviews

Part B: Electric Power Applications

Part C: Generation, Transmission and Distribution

Part D: Control Theory and Applications

Part E: Computers and Digital Techniques

Part F: Communications, Radar and Signal Processing

Part G: Electronic Circuits and Systems

Part H: Microwaves, Optics and Antennas

Part I: Solid-State and Electron Devices

Six issues of each Part are published during the year, and three additional issues of Part A are published covering specialist areas.

This publication is copyright under the Berne Convention and the International Copyright Convention. All rights reserved. Apart from any copying under the UK Copyright Act 1956, part 1, section 7, whereby a single copy of this article may be supplied, under certain conditions, for the purposes of research or private study, by a library of a class prescribed by the UK Board of Trade Regulations (Statutory Instruments, 1957, no. 868), no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means without the prior permission of the copyright owners. Permission is, however, not required to copy abstracts of papers or articles on condition that a full reference to the source is shown.

An IEE licensing arrangement exists whereby organisations entering into an agreement are legally entitled to make up to ten copies of an IEE paper or article.

Authorisation to photocopy items for internal or personal use, or for the internal or personal use of specific clients, is granted by the Institution of Electrical Engineers for libraries and other users registered with the Copyright Clearance Center Transactional Reporting Service, provided that the base fee of $2.00 per copy is paid directly to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA. 0143–702X/83 $2.00 + 0.00. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale.

Photocopies of individual papers published in the *IEE Proceedings* can be supplied from the IEE Library at 10p per page plus a handling charge of 50p per paper, which covers the cost of surface mail (airmail extra). The handling charge is waived if reprints are collected from Savoy Place by purchasers.

The telephone number of the IEE London office is 01 240 1871; telex 261176.

The IEE is not as a body responsible for the opinions expressed by individual authors.
The IEE is a member of the Association of Learned & Professional Society Publishers.

© 1983: The Institution of Electrical Engineers

Secretary of the IEE: H.H.W. Losty
Managing Editor: Bernard Dunkley; *Senior Assistant Editor*: Stephen Cokeham
Assistant Editors: Julia Hubble, Jane Glendening, Irene Adams
Graphics Manager: Maurice Partridge; *Marketing Manager*: Alan Baldwin

Typeset by: Santype International Ltd., Salisbury, Wilts.
Printed in England by: Unwin Brothers Ltd., Old Woking, Surrey

Index

IEE Proceedings

Vol. 130, 1983

ABBREVIATIONS

- p paper, address or lecture
- d discussion on a paper
- a abstract of paper or address
- e errata
- s synopsis of a paper published in full in another Part of the *IEE Proceedings*

Author index

A

Abbott, H. A look at design and safety in the past **A** p297
Abuelma'atti, M.T. Intermodulation spectra for 2-carrier-level SCPC system **G** p25
Abuelma'atti, M.T. Noise loading analysis of a memoryless bandpass system with amplitude nonlinearity and AM/PM conversion **A** p152
Acar, C. Dependent and independent sensitivities in signal-flow graphs **G** p97
Adeniyi, V.O., and Mueller, G.S. see Mueller, G.S.
Afghahi, M., and Harrington, R.J. Charge model for studying corona during surges on overhead transmission lines **C** p16
Agathoklis, P., and Bruton, L.T. Practical-BIBO stability of —n-dimensional discrete systems **G** p236
Aggarwal, R.K., Johns, A.T., Martin, M.A., and Barker, A. see Johns, A.T.
Agu, L.A. An auxiliary armature squirrel cage and a secondary commutating field in DC machines **B** p71
Ahmed, K.M., and Evans, R.J. Broadband adaptive array processing **F** p433
Ainslie, J.F., Macqueen, J.F., Milborrow, D.J., Turner, D.M., and Swift-Hook, D.T. see Macqueen, J.F.
Akazaki, Masanori, Hara, Masanori, and Yamashita, Takahiko see Hara, Masanori
Al-Fileyeh, T.A., Edwards, J.B., and Pacey, K. see Edwards, J.B.
Al-Mudares, M.A.R., and Foulds, K.W.H. Physical explanation of GaAs MESFET I/V characteristics **I** p175
Aldana, F., Uceda, J., and Martinez, P. see Uceda, J.
Ali, I.A., and Auchterlonie, L.J. Temperature distribution in uniform and layered microwave absorbers in waveguide **H** p236
Allen, G., and Holbeche, R.J. see Holbeche, R.J.
Allen, R., and Arnold, J.M. see Arnold, J.M.
Allison, J., and Benson, F.A. Undergraduate projects and their assessment (Commissioned IEE review) **A** p402
Allnatt, J.W., and Collins, R.M. Quality rating of television pictures: comparison of results obtained by laboratories in different countries **F** p289
Almond, T., and Clarke, J. Consideration of the usefulness of microwave propagation prediction methods on air-to-ground paths **F** p649
An, T.Y., and Cullen, A.L. Double Schottky-barrier diode power sensor **H** p160
André T. Salema, C., and Haque-Ahmed, Sufia see Haque-Ahmed, Sufia
Arambepola, B. Discrete Fourier transform processor based on the prime-factor algorithm **G** p138
Arias, J.E., Hernández, C., Feijoó, S., and Bernal, M.A. see Hernández, C.
Arnold, J.M., and Allen, R. Microbending loss in optical waveguides **H** p331
Asai, S., Takeda, E., Nakagome, Y., and Kume, H. see Takeda, E.
Attikiouzel, J., and Crebbin, G. see Crebbin, G.
Auchterlonie, L.J., and Ali, I.A. see Ali, I.A.
Aulin, Tor, and Sundberg, Carl-Erik An easy way to calculate power spectra for digital FM **F** p519
Austin, G.L., Riley, M.M., and Ballantyne, E.H. Bandwidth reduction strategies for the transmission of land-based marine radar data **F** p185
Avni, M., and Bhargava, V.K. see Bhargava, V.K.

B

Babici, B.S. Decoupled load flow with variables in rectangular form **C** p98
Babu Rajendran, T.V., Lakshiminarasimha, C.S., and Naidu, M.S. Lightning and switching impulse breakdown of rod/plane gaps in nitrogen/freon (CCl_2F_2) mixtures **A** p134
Bailbe, J.P., Marty, A., Clarac, J., and Rey, G. see Marty, A.
Baker, S., Roberts, G.G., and Petty, M.C. Phthalocyanine Langmuir-Blodgett-film gas detector **I** p260
Balasubramanian, R., Ram, Babu, and Tripathy, S.C. Temporary overvoltages due to load rejection on a series-compensated transmission line **C** p8
Balchin, M.J., and Davidson, J.A.M. 3-dimensional eddy-current calculation by the network method—formulation using magnetic scalar potential for nonconducting regions **A** p88
Ballantyne, E.H., Austin, G.L., and Riley, M.M. see Austin, G.L.
Banks, J. Address as IEE President: The engineer in the middle ground of manufacture **A** p1
Barakat, M., and Shafai, L. Studies on certain modified Luneberg lenses **H** p363
Barker, A., Johns, A.T., Aggarwal, R.K., and Martin, M.A. see Johns, A.T.
Barlow, William The importance of design **A** p224
Barton, P. Direction finding using an adaptive null tracker **F** p78 **H** p78
Barton, R.S., and Lucas, W.C. Development of the 7.3 MW MOD-5A wind-turbine generator system **A** p537
Baseghi, B., Cadzow, J.A., and Hsu, T. see Cadzow, J.A.
Battesti, J., and Boithias, L. see Boithias, L.
Baumgartner, G.B., Hitney, H.V., and Pappert, R.A. Duct propagation modelling for the integrated-refractive-effects prediction system (IREPS) **F** p630
Beckley, P. Continuous power loss measurement with and against the rolling direction of electrical steel strip using nonenwrapping magnetisers **A** p313
Beiland, B. Eddy currents in circular,square and rectangular rods **A** p112
Beinvogl, W., Müller, W., Risch, L., and Sigusch, R. see Müller, W.
Belmans, R., Hameed, A., Geysen, W., Jordan, H., and Vandenput, A. see Hameed, A.
Bending, R.C. Industrial energy usage **A** p353
Bennett, J.C., and Chambers, B. Identification of unwanted scatterers on a free-field EMI test range **F** p548
Bennett, M., Hamilton, P.M., and Moore, D.J. Estimation of low-level winds from upper-air data **A** p517
Bennett, M.J. Dispersion characteristics of monomode optical-fibre systems **H** p309
Benson, F.A. Reviewing the reviews (Editorial) (Commissioned IEE review) **A** p401
Benson, F.A., Sali, S., and Sitch, J.E. see Sali, S.
Benson, F.A., and Allison, J. see Allison, J.
Bernal, M.A., Hernández, C., Feijoó, S., and Arias, J.E. see Hernández, C.
Bertran-Salvans, M. Unifying approach to spectral estimation **F** p236
Besslich, Ph.W. Efficient computer method for ExOR logic design **E** p203
Betts, P.J. Two-stage current transformers in differential calibration circuits **A** p324
Bhadra, S.N. Validity of describing function analysis for 3-phase power systems **C** p244
Bhagwan, J., Haslett, J.W., and Rao, M.K.N. see Haslett, J.W.
Bhargava, S.C. Energy flow in a 2-pole hysteresis coupling by Poynting theorem **A** p301
Bhargava, V.K., and Avni, M. Net coding gain of some rate 1/2 block codes **F** p325
Bhattacharyya, B.B., and Raut, R. Analysis of switched-capacitor networks containing operational amplifiers with finite DC gain and bandwidth product values **G** p114
Bhattacharyya, S.N., Choudhury, J.K., and Upadhya, R. see Choudhury, J.K.
Billings, S.A., El-Ghezawi, O.M.E., and Zinober, A.S.I. see El-Ghezawi, O.M.E.
Billings, S.A., and Voon, W.S.F. Structure detection and model validity tests in the identification of nonlinear systems **D** p193
Binns, K.J., Low, T.S., and Jabbar, M.A. Behaviour of a polymer-bonded rare-earth magnet under excitation in two directions at right angles **B** p25
Binns, K.J., and Low, T.S. Performance and application of multistacked imbricated permanent magnet generators **B** p421
Birch, J.R. Optical constants of some commercial microwave materials between 90 and 1200 GHz **H** p327
Bird, B.M., and Hargis, C. see Hargis, C.
Birrell, N.D. Application of catastrophe theory to a slotted ALOHA communication system **F** p337
Blackledge, P. Specification languages **A** p185
Bloor, D., and Movaghar, B. Conducting polymers **I** p225
Böhme, J.F. Remarks on the statistical behaviour of orthogonal beamforming **F** p256
Board, K., and Habib, S.E-D. see Habib, S.E-D.
Boithias, L., and Battesti, J. Propagation due to tropospheric inhomogeneities **F** p657
Boland, F.M., and Normile, J.O. see Normile, J.O.
Boswell, D. Hazard analysis and risk assessment: aids to the evaluation of product safety **A** p293
Boutin, N. Two new single op-amp RC bridge-T oscillator circuits **G** p222
Bowden, A.L., and Davies, E.J. Analytic separation of the factors contributing to the eddy-current loss in magnetically nonlinear steel **B** p364
Bowes, S.R., and Clare, J. Steady-state performance of PWM inverter drives **B** p229
Bowes, S.R., and Clements, R.R. Digital computer simulation of variable-speed PWM inverter-machine drives **B** p149
Bowley, R.M., King, P.J., Lewis, G.J., and Shellard, I. Production of short mechanical impulses by means of eddy currents **B** p429
Boys, J.T., Elder, J.M., and Woodward, J.L. see Elder, J.M.
Boys, J.T., and Forster, M.K. see Forster, M.K.
Bradwell, A., and Wheeler, J.C.G. Evaluation of plastics insulators for use on British Railways 25kV overhead line electrification **B** d284
Brandwood, D.H. A complex gradient operator and its application in adaptive array theory **F** p11 **H** p11
Brandwood, D.H. Convergence time of sidelobe cancellation systems **F** p46 **H** p46
Braunstein, A., and Izraeli, I. see Izraeli, I.
Brewster, R.L., and Cadman, P.J. see Cadman, P.J.
Brisson Lopes, L., and Lockhart, G.B. Characteristics of demodulated narrowband SSB-FM systems **F** p166
Bristow, T.A. Experimental open-loop canceller for radar **F** p109 **H** p109
Brown, D.J. Empirical model for gallium arsenide MESFETs **I** p29
Brown, E.P.M., and Sirisena, H.R. see Sirisena, H.R.
Brown, J.E., Drury, W., and Jones, B.L. see Drury, W.
Bruton, L.T., and Agathoklis, P. see Agathoklis, P.
Bruton, L.T., and Strecker, T.E. Two-dimensional discrete filters using spatial integrators **G** p271
Bruzzone, S.P., and Kaveh, M. see Kaveh, M.
Bryant, F.J., Qadeer, A., and Reed, J. $Pb_{1-x}Sn_xSe/PbSe$ heterostructure lasers **I** p287
Bryant, F.J., and Krier, A. Low-voltage direct-current electroluminescence in ZnS:RE thin films **I** p160
Bryant, G.F., and Yeung, L.F. Methods and concepts of dominance optimisation **D** p72
Burgess, L. Use of sophisticated systems to improve safety in design **A** p296
Butcher, J. Design for safety **A** p292

C

Cadman, P.J., and Brewster, R.L. Data transmission over VHF and UHF land mobile radio channels **F** p527
Cadzow, J.A., Baseghi, B., and Hsu, T. Singular-value decomposition approach to time series modelling **F** p202
Calouba, L.P., and Diniz, P.S.R. see Diniz, P.S.R.
Calzolari, P.U., Graffi, S., Masetti, G., and Severi, M. NMOS dynamic differential amplifier **G** p29

Cameron, R.G., and Kouvaritakis, B. see Kouvaritakis, B.
Canay, I.M. Determination of model parameters of synchronous machines **B** p86
Cantoni, A.C., Hudson, J.E., and Ratner, A.S. see Hudson, J.E.
Carpenter, R.H. Plant life monitoring and extension **A** p362
Carroll, J.E., and Everard, J.K.A. see Everard, J.K.A.
Carroll, J.E., and Herscher, B.A. see Herscher, B.A.
Carter, R.G. Representation of coupled-cavity slow-wave structures by equivalent circuits **I** p67
Casaca, A.J.D., and Woods, J.V. Teaching digital-systems design with a microprocessor-controlled patchboard **E** p75
Case, S.H., Hayes, A.M., McNeil, J.H., Morrison, R.E., and Riches, E.E. Electrification of Taiwan main-line railway from Keelung to Kaohsiung **B** p289
Castella, F.R. Optimisation of a generalised square-law detector **F** p405
Chakrabarty, A., Das, B.N., and Joshi, K.K. see Das, B.N.
Chambers, B., and Bennett, J.C. see Bennett, J.C.
Chan, D.S.H., Chua, S.J., and Leong, M.S. see Chua, S.J.
Chan, W-C., and Hsu, Y-Y. Automatic generation control of interconnected power systems using variable-structure controllers **C** d231
Chan, Y.T., Inkol, R., and Simmons, S. Time delay estimation with receivers of approximately known phase difference characteristics **F** p272
Chapman, P.F. Energy content and availability of metals **A** p354
Charlton, D.G., Holt, A.R., and Evans, B.G. Comparison of the bistatic cross-section and reflectivities of spherical and spheroidal raindrops at microwave frequencies **F** p317
Chatterjee, J.S., and Das, N. see Das, N.
Chatterjee, P.K., Yang, Ping, and Shichijo, Hisashi Modelling of small MOS devices and device limits **I** p105
Chaudhuri, B.B. Efficient algorithm for image enhancement **E** p95
Cheetham, B.M.G., and Hughes, P.M. see Hughes, P.M.
Chen, C.F., and Siu, W.C. see Siu, W.C.
Chen, Y.L., Singh, M.G., Hassen, M.F., and Pan, Q.R. see Singh, M.G.
Chesshire, J.H. UK. energy policy-issues and priorities **A** p350
Chidambaram, P., Kamath, A.A., Subbiah, M., and Krishnamurthy, M.R. A new pole-changing winding using star/star-delta switching **B** p130
Ching, P.C., and Goodyear, C.C. Adaptive cascade filter for speech analysis **E** p11
Cho, G.H., Jeon, S.J., and Park, S.B. Optimum design of a new DC-SC circuit **B** p171
Chotai, A., and Owens, D.H. see Owens, D.H.
Choudhury, J.K., Bhattacharyya, S.N., and Upadhya, R. Analogue multiplier/divider with digital output **G** p101
Chrissoulidis, D.P., and Kriezis, E.E. see Kriezis, E.E.
Chua, S.J., Leong, M.S., and Chan, D.S.H. Lateral current spreading in stripe-contact semiconductor lasers **I** p302
Chuang, S.-S. Practical universal active filter using generalised-immittance-convertor biquads **G** p153
Chunder, Tapan Extended-range angular rotary pick-off **D** p41
Ciric, I.R. Proximity effect between a wire carrying current and a rotating cylindrical conductor **A** p122
Clapp, M.D. Monitoring and control using energy management systems **A** p357
Clarac, J., Marty, A., Bailbe, J.P., and Rey, G. see Marty, A.
Clare, J., and Bowes, S.R. see Bowes, S.R.
Clark, A.P., Slater, M., and Parama Raj, K. Simple nonlinear equalisers for binary baseband signals **F** p495
Clark, A.P., and Najdi, H.Y. Detection process of a 9600 bit/s serial modem for HF radio links **F** p368
Clarke, D.W., Hodgson, A.J.F., and Tuffs, P.S. Offset problem and k-incremental predictors in self-tuning control **D** p217
Clarke, J., and Almond, T. see Almond, T.
Clarke, J., and Cracknell, D.J. Experimental study of orthomode couplers for use in power combining and distribution **H** p305
Clarke, P.N., and Turner, L.F. Experiments with packet switching of voice traffic **G** p105
Clarke, R.J. Spectral response of the discrete cosine and Walsh-Hadamard transforms **F** p309
Clements, R.R., and Bowes, S.R. see Bowes, S.R.
Clifford Carter, G., and Nuttall, Albert H. Analysis of a generalised framework for spectral estimation.Part 1 : The technique and its mean value **F** p239
Coales, J.F. The role of the engineer in a free economy **A** p393
Cole, P.H., and Eshraghian, E. see Eshraghian, E.
Cole, R.S., Medeiros Filho, F.C., and Jayasuriya, D.A.R. see Medeiros Filho, F.C.
Collins, R.M., and Allnatt, J.W. see Allnatt, J.W.
Constable, G.E.P. Design for safety **A** p292
Constantinides, A.G., and Mitrakos, D.K. see Mitrakos, D.K.
Constantinides, A.G., and Siu, W. see Siu, W.
Constantinides, A.G., and Valenzuela, R.A. see Valenzuela, R.A.
Conte, Ernesto, D'Addio, Egido, Farina, Alfonso, and Longo, Maurizio Multistatic radar detection: synthesis and comparison of optimum and suboptimum receivers **F** p484
Cook, C.D., and Smith, B.H. Effects of machine parameter values on dynamic response and stability regions of doubly-fed cascade induction machines **B** p137
Cook, P.A., and Eskicioglu, A.M. Transient stability analysis of electric power systems by the method of tangent hypersurfaces **C** p183
Cook, V. Improved input signals to the polarised-mho distance relay **C** p206
Coppus, G.W.M., Shah, S.L., and Wood, R.K. Robust multivariable control of a binary distillation column **D** p201
Cory, B.J., and Ralph, M.C. see Ralph, M.C.
Cox, J.R., and Lim, W.Y-P. see Lim, W.Y-P.
Cracknell, D.J., and Clarke, J. see Clarke, J.
Crebbin, G., and Attikiouzel, J. The general purpose design of 2-dimensional recursive digital filters **G** p171
Cristescu, D., Gray, C., and Timotin, A. see Gray, C.
Cristina, S., D'Amore, M., and Salerno, M. Digital simulator of transformer windings subject to impulse voltage **C** d91
Cristina, S., and D'Amore, M. Prediction of long-line radio-interference field from measurements on multiconductor short-line **C** p83
Cullen, A.L., and An, T.Y. see An, T.Y.
Curtis, T.E., and Wickenden, J.T. Hardware-based Fourier transforms : algorithms and architectures **F** p423
Cusdin, A.R., and Fane, N.C.W. Performance of an interferometer angle-measuring receiver against non-line-of-sight transmitters **F** p695

D

D'Addio, E., and Galati, G. Effects of finite word length on FIR filters for MTD processing **F** p573
D'Addio, Egido, Conte, Ernesto, Farina, Alfonso, and Longo, Maurizio see Conte, Ernesto
D'Amore, M., Cristina, S., and Salerno, M. see Cristina, S.
D'Amore, M., and Cristina, S. see Cristina, S.
Dagless, E.L., Edwards, M.D., and Proudfoot, J.T. Shared memories in the CYBA-M multi-microprocessor **E** p116
Daly, S.A., de Paor, A.M., and Simpson, R.J. Modelling and control of a wind-driven induction generator for water storage heating **A** p596
Daniels, A.R., White, B.A., and Lipczynski, R.T. see White, B.A.
Das, B.N., Chakrabarty, A., and Joshi, K.K. Characteristic impedance of elliptic cylindrical strip and microstriplines filled with layered substrate **H** p245
Das, N., and Chatterjee, J.S. Conically depressed microstrip patch antenna **H** p193
da Silva, J.G.D., and Watson, I. Pseudo-associative store with hardware hashing **E** p19
Daughters, S. Manufacturing systems and the engineer **A** p63
Davidson, C.W. Address as Chairman of the IEE Science, Education & Technology Division: Education for technology **A** p36
Davidson, J.A.M., and Balchin, M.J. see Balchin, M.J.
Davies, D.E.N., and Guy, J.R.F. see Guy, J.R.F.
Davies, E.J., and Bowden, A.L. see Bowden, A.L.
Davies, P.G., and Norbury, J.R. Review of slant path propagation mechanisms and their relevance to systems performance **F** p665
De Backer, D., De Buck, F., and Gistelinck, P. see De Buck, F.
De Buck, F., Gistelinck, P., and De Backer, D. Loss-optimal PWM waveforms for variable-speed induction-motor drives **B** p310
de Fornel, B., Hapiot, J.C., Saubion, C., and Trannoy, B. Determination of optimum operating frequency of a current-source inverter-controlled asynchronous machine by measurement of stator voltages **B** p207
Denturck, B., and DeSmedt, R. see DeSmedt, R.
de Paor, A.M., Daly, S.A., and Simpson, R.J. see Daly, S.A.
Depledge, P.G., Yaacob, M., and Hartley, M.G. see Yaacob, M.
Depledge, P.G., and Leite, J.C.B. see Leite, J.C.B.
de Pourcq, M. Field and power-density calculations by three-dimensional finite elements **H** p377
de Queiroz, J.F., Leite da Silva, A.M., and Do Coutto Filho, M.B. see Leite da Silva, A.M.
De Smedt, R., and Denturck, B. Scattering matrix of junctions between rectangular waveguides **H** p183
Dexter, A.L. Self-tuning control algorithm for single-chip microcomputer implementation **D** p255
Diamantopoulos, D.N., and Nikolopoulos, P.N. see Nikolopoulos, P.N.
Dimoff, K., Guile, A.E., and Vijh, A.K. see Guile, A.E.
Diniz, P.S.R., and Calouba, L.P. High-performance integrators and applications in 2-integrator loop biquads **G** p94
Dix, C.H., Lynch, A.C., and Drake, A.E. see Lynch, A.C.
Do Coutto Filho, M.B., Leite da Silva, A.M., and de Queiroz, J.F. see Leite da Silva, A.M.
Doany, P., Gott, G.F., and Dutta, S. see Gott, G.F.
Doraiswami, R. Robust control of a class of nonlinear servomechanism problem **D** p63
Drake, A.E., Lynch, A.C., and Dix, C.H. see Lynch, A.C.
Drury, W., Jones, B.L., and Brown, J.E. Application of controlled flywheeling to the recovery bridge of a static Kramer drive **B** p73
Dubey, G.K., Rao, N.N., and Prabhu, S.S. see Rao, N.N.
Dubey, G.K., and Patel, H.K. see Patel, H.K.
Duncan, J. Linear induction motor—equivalent-circuit model **B** p51
Durrani, T.S. Spectral analysis (Editorial) **F** p193
Durrani, T.S., and Sharman, K.C. see Sharman, K.C.
Durrani, T.S., and Sharman, K.C. Eigenfilter approaches to adaptive array processing **F** p22 **H** p22
Dutta, S., Gott, G.F., and Doany, P. see Gott, G.F.
DuttaRoy, S.C. Optimum passive integrators **G** p196

E

Eastham, J.F., and Evans, P.D. see Evans, P.D.
Ebert, S., and Heute, U. Accelerated design of linear or minimum phase FIR filters with a Chebyshev magnitude response **G** p267
Edwards, C.B. Field distortion parameters for a nonaxisymmetric cylindrical transmission line **A** p322
Edwards, J.B. Stability of accelerating repetitive systems **D** p183
Edwards, J.B., Pacey, K., and Al-Fileyeh, T.A. Ward-Leonard characteristics from nonlinearly-controlled series-motor drives **B** p302
Edwards, J.B., and Twemlow, J.K. Effect of wide-beam sensors on control of dual-delay systems **D** p226
Edwards, M.D., Dagless, E.L., and Proudfoot, J.T. see Dagless, E.L.
Ekanayake, N. MSK and offset QPSK signal transmissions through nonlinear satellite channels in the presence of intersymbol interference **F** p513
Ekwue, A.O., and Short, M.J. Interactive security evaluation in power-system operation **C** p61
El-Fattah, Y.M. Recursive self-tuning algorithm for adaptive Kalman filtering **D** p341
El-Ghezawi, O.M.E., Billings, S.A., and Zinober, A.S.I. Variable-structure systems and system zeros **D** p1
El-Marsafawy, M. Use of frequency-scan techniques for subsynchronous-resonance analysis of a practical series-capacitor compensated AC network **C** p28
Elangovan, S. New approach for real power loss minimisation **C** p295
Elder, J.M., Boys, J.T., and Woodward, J.L. The process of self excitation in induction generators **B** p103
Elliott, H., Goodwin, G.C., and Teoh, E.K. see Goodwin, G.C.
Elmasry, M.I. VLSI. (Editorial) **I** p93
Eom, H.J., and Fung, A.K. see Fung, A.K.
Eshraghian, E., and Cole, P.H. A new class of passive subharmonic transponders **G** p45
Eskicioglu, A.M., and Cook, P.A. see Cook, P.A.
Evans, B.G., Charlton, D.G., and Holt, A.R. see Charlton, D.G.
Evans, E.J., and Momen, S. see Momen, S.
Evans, P.D., and Eastham, J.F. Double-disc alternator with AC-side excitation **B** p95
Evans, P.D., and Eastham, J.F. Slotless-disc alternator with AC-side excitation **B** p413
Evans, R.J., and Ahmed, K.M. see Ahmed, K.M.
Evans, S., and Kong, F.N. TEM horn antenna : input reflection characteristics in transmission **H** p403
Everard, J.K.A., and Carroll, J.E. Practical comparisons of optoelectronic sampling systems and devices **I** p5

F

Faithfull, L.M., Watson, D.B., and Williams, N.J. see Watson, D.B.
Falkner, A.H. Novel accelerator energy convertor **I** p192

Fam, W.Z. Mathematical model and characteristics of parametric transformers **B** d69
Fane, N.C.W., and Cusdin, A.R. see Cusdin, A.R.
Fanthome, B.A., Kettleborough, J.G., and Smith, I.R. see Kettleborough, J.G.
Farina, Alfonso, Conte, Ernesto, D'Addio, Egido, and Longo, Maurizio see Conte, Ernesto
Farrier, D.R. Gain of an array of sensors subjected to processor perturbations **H** p251
Farrier, D.R., and Hicks, T.J. Detection of narrow-band sources by an array **F** p133 **H** p133
Farrier, D.R., and Hicks, T.J. Power estimation for an array of sensors and its use in broadband detection **F** p261
Feijoó, S., Hernández, C., Arias, J.E., and Bernal, M.A. see Hernández, C.
Fernando, K.V., and Nicholson, H. Reciprocal transformations in balanced model-order reduction **D** p359
Ferrari, R.L., Webb, J.P., and Maile, G.L. see Webb, J.P.
Finch, J.W., and Jones, D.I. see Jones, D.I.
Finkelstein, A.C.W., and Finkelstein, L. see Finkelstein, L.
Finkelstein, L., and Finkelstein, A.C.W. Review of design methodology **A** p213
Fleszar, J., and Mendrela, E.A. Twin-armature rotary-linear induction motor **B** p186
Flurscheim, C.H. Man-machine interface design **A** p167
Foo, S.W., and Turner, L.F. Hybrid frequency-domain coding of speech signals **F** p459
Ford, G., Niblett, C., and Walker, L. Ocean thermal-energy conversion **A** p93
Forrest, J.R., and Ward, C.J. see Ward, C.J.
Forster, M.K., and Boys, J.T. New cycloconvertor for power-system high-frequency links **C** p111
Forsythe, W., and Lim, C.C. see Lim, C.C.
Foulds, K.W.H., and Al-Mudares, M.A.R. see Al-Mudares, M.A.R.
Frangakis, G.P. A new binary logarithm-based computing system **E** p169
Frenkel, A. External modes of two-dimensional thin scatterers **H** p209
Freris, L.L., and Tsitsovits, A.J. see Tsitsovits, A.J.
Friedlander, B. Efficient algorithm for ARMA spectral estimation **F** p195
Frontin, S.O., Peixoto, C.A.O., and Jardini, J.A. see Peixoto, C.A.O.
Fung, A.K., and Eom, H.J. Scattering from a random layer with applications to snow, vegetation and sea ice **F** p591

G

Galati, G., and D'Addio, E. see D'Addio, E.
Gallantree, H.R. Review of transducer application of polyvinylidene fluoride **I** p219
Gardiol, F.E., and Mosig, J.R. see Mosig, J.R.
Garrad, A.D. Dynamics of wind turbines **A** p523
Gawthrop, P.J., Proudfoot, C.G., and Jacobs, O.L.R. see Proudfoot, C.G.
Gebbels, D.R. Design for safety today—the Met **A** p298
George, W.W. Contrasts in management styles—Europe and the USA (Lecture) **A** p288
Geysen, W. The education of engineers in Belgium **A** p49
Geysen, W., Hameed, A., Belmans, R., Jordan, H., and Vandenput, A. see Hameed, A.
Gharpure, V.S., and Revankar, G.N. A cycloconvertor-linked induction heating system **B** p321
Ghodekar, J.G., and Gopal, M. see Gopal, M.
Ghosh, D.K., and Patranabis, D. see Patranabis, D.
Gibbon, R.R., and Price, C.F. see Price, C.F.
Gibson, C., and Haykin, S. Radar performance studies of adaptive lattice clutter-supression filters **F** p357
Gibson, J.A., and Hamilton-Jenkins, M.A. Transfer-function models of sampled systems **G** p37
Gistelinck, P., De Buck, F., and De Backer, D. see De Buck, F.
Gondhalekar, V.M., and Jayawant, B.V. Chassis dynamics related to a low-cost magnetically suspended vehicle **D** p83
Goodman, C.H.L. Direct-gap group IV semiconductors based on tin **I** e46
Goodwin, G.C., Elliott, H., and Teoh, E.K. Deterministic convergence of a self-tuning regulator with covariance resetting **D** p6
Goodyear, C.C., and Ching, P.C. see Ching, P.C.
Goodyear, C.C., and Tate, C.N. see Tate, C.N.
Gopal, M., and Ghodekar, J.G. Sensitivity reduced design of discrete linear regulator with prescribed degree of stability **D** p261
Goto, N., and Ito, K. see Ito, K.
Gott, G.F., Dutta, S., and Doany, P. Analysis of HF interference with application to digital communications **F** p452
Gough, P.T. Side-looking sonar or radar using phase difference monopulse techniques.Coherent and noncoherent applications **F** p392
Goutis, C.E., and Ibrahim, M.K. New algorithm for spectrum estimation and an associated VLSI design **F** p250
Gowar, J., and Pathak, V.K. see Pathak, V.K.
Graffi, S., Calzolari, P.U., Masetti, G., and Severi, M. see Calzolari, P.U.
Grant, D. Design of phase-change 2-speed windings for induction motors,using pole-amplitude modulation techniques **B** p45
Grantham, C. Zero-sequence dynamic braking and parameter determination **B** p406
Gray, C., Timotin, A., and Cristescu, D. Prediction of surge propogation influenced by corona and skin effect **A** p264
Green, S.H. Consumer appliance design for inherent safety **A** p235
Griffiths, J.W.R. Adaptive array processing.A tutorial **F** p3 **H** p3
Griffiths, L.J., and McGregor, KevinB. Spectral estimation using an adaptive oscillator **F** p246
Grimsdale, R.L., Halsall, F., Shoja, G.C., and Lambert, J.E. see Halsall, F.
Grönewald, H. Field optimisation of high-voltage electrodes **C** p201
Guardabassi, G., Locatelli, A., Maffezzoni, C., and Schiavoni, N. Computer-aided design of structurally constrained multivariable regulators, Pt. 1: Problem statement,analysis and solution **D** p155
Guardabassi, G., Locattelli, A., Maffezzoni, C., and Schiavoni, N. Computer-aided design of structurally constrained multivariable regulators, Pt. 2: Applications **D** p165
Guile, A.E., Dimoff, K., and Vijh, A.K. Transient low-current arc-cathode processes on metals having a very thin oxide film in air at atmospheric pressure **A** p379
Gunes, M., and Howson, D.P. Error analysis of the measurement of microstrip effective dielectric constant for the characterisation of passive two-ports **H** p369
Gunn, D.J., and Sinha, A.K. Nonlinear control of a paper-stock flowbox **D** p131
Guo, T.Y., Hwang, C., and Shih, Y.P. see Hwang, C.
Guo, Y.C., and Smith, M.S. Sidelobe reduction for phased array antennas using digital phase shifters. Part 1: One bit phase weighting **H** p343
Guo, Y.C., and Smith, M.S. Sidelobe reduction for phased array antennas using digital phase shifters. Part 2: Two bit phase weighting **H** p352
Guy, J.R.F., and Davies, D.E.N. Novel method of multiplexing radiocommunication antennas using circular-array configuration **H** p410
Guy, J.R.F., and Davies, D.E.N. UHF circular arrays incorporating open-loop null steering for communications **F** p67 **H** p67
Gyatt, G.W., and Zambrano, T.G. see Zambrano, T.G.

H

Habib, S.E-D., and Board, K. Theory of the triangular-barrier switch **I** p292
Hagisawa, T., Sekine, M., Musha, T., Tomita, Y., Irabu, T., and Kiuchi, E. see Sekine, M.
Hall, P.S. Microstrip linear array with polarisation control **H** p215
Halsall, F., Grimsdale, R.L., Shoja, G.C., and Lambert, J.E. Development environment for the design and test of applications software for a distributed multiprocessor computer system **E** p25
Hamdy, S.M.A., Parker, E.A., and Langley, R.J. see Parker, E.A.
Hameed, A., Belmans, R., Geysen, W., Jordan, H., and Vandenput, A. Comparison of 3-dimensional and 1-dimensional calculations of the thrust of a sector motor **B** d228
Hamilton, P.M., Bennett, M., and Moore, D.J. see Bennett, M.
Hamilton-Jenkins, M.A., and Gibson, J.A. see Gibson, J.A.
Hammond, P., and Tsiboukis, T.D. Dual finite-element calculations for static electric and magnetic fields **A** p105
Hannay, J.H. Natural focusing and catastrophes **F** p623
Hapiot, J.C., de Fornel, B., Saubion, C., and Trannoy, B. see de Fornel, B.
Haque-Ahmed, Sufia, and André T. Salama, C. Depletion mode MOSFET modelling for CAD **I** p281
Hara, Masanori, Yamasnita, Takahiko, and Akazaki, Masanori Microdischarge characteristics in air gap between spherical particle and plane **A** p329
Hargis, C., and Bird, B.M. Prediction and control of harmonic phase sequence in power convertors **B** p58
Hargis, C., and Vas, P. Steady-state analysis of 3-phase cage motors with rotor-bar and end-ring faults **B** d225
Hargrave, P.J., and Ward, C.R. see Ward, C.R.
Hargroves, R.A. Road lighting (Commissioned IEE review) **A** p420
Hariharan, S., Ramalyer, S., and Ramachandran, K. see Ramalyer, S.
Harman, M., and Johnston, E. Better television by satellite—receiver and modulation techniques. (IEE Colloquium report) **F** p576
Harrington, R.J., and Afghahi, M. see Afghahi, M.
Harrison, W.K. Address as chairman of the IEE North Eastern Centre: Electricity supply—the changing phases **C** p269
Hartley, M.G., Yaacob, M., and Depledge, P.G. see Yaacob, M.
Hashimoto, M. Asymptotic theory of vector modes in inhomogeneous optical fibres: uncladded fibres **H** p261
Haslett, J.W., Rao, M.K.N., and Bhagwan, J. High-frequency monolithic generalised immittance convertor for RC active filters **G** p78
Hassen, M.F., Singh, M.G., Chen, Y.L., and Pan, Q.R. see Singh, M.G.
Hawker, I. Clock breakthrough in ECL integrated circuits **G** p252
Hawley, R., and Marlow, B.A. Management of the design of large turbine generators **A** p207
Hayes, A.M., Case, S.H., McNeil, J.H., Morrison, R.E., and Riches, E.E. see Case, S.H.
Haykin, S., and Gibson, C. see Gibson, C.
Haykin, S., and Kesler, J. Adaptive canceller for elevation angle estimation in the presence of multipath **F** p303
Height, Frank Science and style.The integrating function of design **A** p180
Heller, H.G. Organic fatigue-resistant photochromic imaging materials **I** p209
Helszajn, J. Eiganvalue analysis of 4-port crosswire YIG coupling circuit **H** p191
Helszajn, J., and Levy, R. see Levy, R.
Helszajn, J., and Sharp, J. 2000 W mean-power X-band waveguide junction circulator using composite turnstile resonator **H** p375
Helvey, R.A. Radiosonde errors and spurious surface-based ducts **F** p643
Hernández, C., Feijoó, S., Arias, J.E., and Bernal, M.A. Comparative study of linear prediction parameters for quantification and monitoring of dysphonic voices **A** p336
Herscher, B.A., and Carroll, J.E. Integrated two-pass reflectometer : low cost seven-port circuit **H** p420
Hesmondhalgh, D.E., and Tipping, D. Effect of stator slotting on the performance of sheet-rotor induction motors **B** p395
Hesmondhalgh, D.E., and Tipping, D. Equivalent rotor impedance of sheet-rotor induction motors **B** p331
Hesmondhalgh, D.E., and Tipping, D. Miniature sheet-rotor induction motors for extremely high speeds **B** p265
Heute, U., and Ebert, S. see Ebert, S.
Hicks, T.J., and Farrier, D.R. see Farrier, D.R.
Hirasa, T., Takeda, Y., and Morimoto, S. see Takeda, Y.
Hitney, H.V., Baumgartner, G.B., and Pappert, R.A. see Baumgartner, G.B.
Hiyama, T. Coherency-based identification of optimum site for stabiliser applications **C** p71
Hmamed, A., and Radouane, L. Decentralised nonlinear adaptive feedback stabilisation of large-scale interconnected systems **D** p57
Hodgson, A.J.F., Clarke, D.W., and Tuffs, P.S. see Clarke, D.W.
Hoffmann, R. General properties of tensor Green's function for planar ferrite structures **H** p373
Holbeche, R.J., Parsons, J.D., and Ibrahim, M.F. see Parsons, J.D.
Holbeche, R.J., and Allen, G. Influence of series reactance on quartz-crystal resonators **G** p145
Holmes, E.J., and Moffatt, A.M. Parallelogram theory for the solution of distributed network voltage problems by computer **C** p153
Holmes, F.E., Jamal, H., and Zafrullah, A. see Jamal, H.
Holroyd, P. Applications of network theory to social systems **A** p273
Holt, A.R., Charlton, D.G., and Evans, B.G. see Charlton, D.G.
Howard, N. Electrification of the Midland Suburban services **B** p109
Howson, D.P., and Gunes, M. see Gunes, M.
Hsu, T., Cadzow, J.A., and Baseghi, B. see Cadzow, J.A.
Hsu, Y-Y., and Chan, W-C. see Chan, W-C.
Huanca, J., and Spence, R. New statistical algorithm for fault location in toleranced analogue circuits **G** p243
Hudson, J.E. Characteristic frequency responses of broadband adaptive arrays **F** p267
Hudson, J.E., Ratner, A.S., and Cantoni, A.C. Coefficient perturbation adaptive HF array **F** p91 **H** p91
Hughes, J., Smith, J.R., Lees, P., and McAllister, D. see Smith, J.R.
Hughes, P.M., and Cheetham, B.M.G. Digital filter structures for canonic signed-digit code implementation by microprocessor **E** p37
Humpage, W.D. z-transform transient analysis in power systems **C** d227
Humpage, W.D., Wong, K.P., and Nguyen, T.T. Hilbert transform in impulse functions of power-transmission-line electromagnetic transient model **C** p266
Humpage, W.D., and Wong, K.P. Discriminative response of distance protection in reverse-fault operation **C** p217

Hunkin, D.J., and Litchfield, G.W. An optical fibre section in the Cambridge digital ring **E** p154
Hurst, S.L., Muzio, J.C., and Miller, D.M. see Muzio, J.C.
Hussey, C.D. Radiation from graded-index single-mode fibres **H** p225
Hutchinson, M.A., Lang, R.D., and Yee, H. see Lang, R.D.
Hwang, C., Guo, T.Y., and Shih, Y.P. Numerical inversion of multidimensional Laplace transformer via block-pulse functions **D** p250

I

Ibrahim, M.F., Parsons, J.D., and Holbeche, R.J. see Parsons, J.D.
Ibrahim, M.F., and Parsons, J.D. see Parsons, J.D.
Ibrahim, M.F., and Parsons, J.D. Signal strength prediction in built-up areas.Part 1 : Median signal strength **F** p377
Ibrahim, M.K., and Goutis, C.E. see Goutis, C.E.
Indulkar, C.S., Kumar, Parmod, and Koihari, D.P. Modal propagation and sensitivity of modal quantities in crossbonded cables **C** p278
Infield, D.G., Slack, G.W., Lipman, N.H., and Musgrove, P.J. Review of wind/diesel strategies **A** p613
Inkol, R., Chan, Y.T., and Simmons, S. see Chan, Y.T.
Irabu, T., Sekine, M., Musha, T., Tomita, Y., Hagisawa, T., and Kiuchi, E. see Sekine, M.
Irving, M.R., and Sterling, M.J.H. Economic dispatch of active power with constraint relaxation **C** p172
Ito, K. Circularly polarised printed antenna with wide axial-ratio bandwidth using strip dipoles and slots **H** p397
Ito, K., and Goto, N. Dual-frequency circularly polarised printed antenna composed of strips and slots **H** p170
Itoh, A., and Kimpan, C. see Kimpan, C.
Itoh, Kiyoo., and Sunami, Hideo. High-density one-device dynamic MOS memory cells **I** p127
Izatt, J.B. An example of product innovation in a simple power outlet **A** p223
Izraeli, I., and Braunstein, A. Analysis and design of protection systems for structures against direct lightning strokes. Part 1: Theory **A** p140

J

Jabbar, M.A., Binns, K.J., and Low, T.S. see Binns, K.J.
Jacobs, O.L.R., Proudfoot, C.G., and Gawthrop, P.J. see Proudfoot, C.G.
Jain, N.K., and Singhal, K. Computing system roots and their sensitivities **G** p178
Jakobsen, K., and Lier, E. Correction to improved formulas for input impedance of wax-fed microstrip patch antennas **H** p190
Jamal, H., Zafrullah, A., and Holmes, F.E. Simple switched-capacitor voltage-controlled oscillator **G** p263
Jamieson, P., and McLeish, D. The HWP-300 wind turbine **A** p550
Jan, Y.G., and Wong, K.M. see Wong, K.M.
Jana, P.B., Nandi, S., and Nandi, R. see Nandi, S.
Jardini, J.A., Peixoto, C.A.O., and Frontin, S.O. see Peixoto, C.A.O.
Jayasuriya, D.A.R., Medeiros Filho, F.C., and Cole, R.S. see Medeiros Filho, F.C.
Jayawant, B.V., and Gondhalekar, V.M. see Gondhalekar, V.M.
Jennings, B.R. Molecular electro-optics **I** p212
Jeon, S.J., Cho, G.H., and Park, S.B. see Cho, G.H.
Johns, A.T., Aggarwal, R.K., Martin, M.A., and Barker, A. z-transform transient analysis in power systems **C** d227
Johns, A.T., and Martin, M.A. New ultra-speed distance protection using finite-transform techniques **C** p127
Johnson, A. Duality of the discrete-time optimal filter and regulator problems **D** p173
Johnston, E., and Harman, M. see Harman, M.
Johnston, J.A. Parallel pipeline fast Fourier transformer **F** p564
Johnston, S.L. Chaff **F** d355
Jones, B.L., Drury, W., and Brown, J.E. see Drury, W.
Jones, C.D.E. Practical energy management **A** p356
Jones, D.I., and Finch, J.W. Optimal control of a voltage-driven stepping motor **D** p175
Jones, P.G.A., and Kimber, I.D. Measurement of switching characteristics of agile frequency sources **H** p495
Jordan, H., Hameed, A., Belmans, R., Geysen, W., and Vandenput, A. see Hameed, A.
Jordan, J.R., and Kiani-Shabestari, B. Deriving delayed sequences from pseudo-random-noise generators using exclusive NOR feedback **G** p89
Jordan, J.R., and Whittington, H.W. see Whittington, H.W.
Joshi, K.K., Das, B.N., and Chakrabarty, A. see Das, B.N.

K

Kak, S.C. Overview of analogue signal encryption **F** p399
Kalouptsidis, N., and Manolarakis, M. Sequences of linear-feedback shift registers with nonlinear-feed forward logic **E** p174
Kaltenecker, A., and Widl, W. High-voltage test equipment for vacuum interrupters and contacts ('arc and spark' testing) **A** p387
Kamath, A.A., Chidambaram, P., Subbiah, M., and Krishnamurthy, M.R. see Chidambaram, P.
Kamiya, Y. Servo-system design technique utilising sensitivity as a design parameter **D** p209
Kaveh, M., and Bruzzone, S.P. Statistical efficiency of correlation-based methods for ARMA spectral estimation **F** p211
Keen, K.M. New technique for the evaluation of the scattering cross-sections of radar corner reflectors **H** p322
Keen, N.J. Mott-barrier mixer diodes with improved semiconductor profiles for cooled operation at submillimetre wavelengths **I** p171
Kennedy, M.W., and Wood, A.B. see Wood, A.B.
Kesler, J., and Haykin, S. see Haykin, S.
Kettleborough, J.G., Smith, I.R., and Fanthome, B.A. Simulation of a dedicated aircraft generator supplying a heavy rectified load **B** p444
Kiani-Shabestari, B., and Jordan, J.R. see Jordan, J.R.
Kidd, P.T., and Munro, N. Design of model reference systems using frequency-domain methods **D** p273
Kilvington, J. Perturbation adaptive array processor for airborne application **F** p84 **H** p84
Kimber, I.D., and Jones, P.G.A. see Jones, P.G.A.
Kimpan, C., and Itoh, A. Recognition of printed Thai characters using a matching method **E** p183
King, P.J., Bowley, R.M., Lewis, G.J., and Shellard, I. see Bowley, R.M.
Kinoshita, H., and Matsuura, K. see Matsuura, K.
Kiuchi, E., Sekine, M., Musha, T., Tomita, Y., Hagisawa, T., and Irabu, T. see Sekine, M.
Klemm, R. Adaptive clutter supression for airborne phased array radars **F** p125 **H** p125
Knöchel, R., and Schünemann, K. Noise performance of cavity stabilised oscillators **H** p281
Koihari, D.P., Indulkar, C.S., and Kumar, Parmod see Indulkar, C.S.
Kong, F.N., and Evans, S. see Evans, S.
Koshiji, K., Shu, E., and Miki, S. Simplified computation of coplanar waveguide with finite conductor thickness **H** p315
Kothari, M.L., Nanda, J., and Satsangi, P.S. see Nanda, J.
Kotsopoulos, S.A. Minimisation of intermodulation interference **F** p350
Kouvaritakis, B., and Cameron, R.G. Discrete-time multivariable criterion for limit cycle predictions **D** p295
Kovaleski, A.B. High-speed bus arbiter for multiprocessors **E** p49
Kramer, J., Magee, J., Sloman, M., and Lister, A. CONIC: an integrated approach to distributed computer control systems **E** p1
Krier, A., and Bryant, F.J. see Bryant, F.J.
Kriezis, E.E., and Chrissoulidis, D.P. Field distribution in a cylindrical shell of finite length and thickness due to an external current filament **A** p46
Krishnamurthy, M.R., Chidambaram, P., Kamath, A.A., and Subbiah, M. see Chidambaram, P.
Kriz, J. A queueing analysis of a symmetric multiprocessor with shared memories and buses **E** p83
Kroupa, V.F. Low-noise microwave-frequency synthesisers: design principles **H** p483
Krücker, K. Rapid interference suppression using a Kalman filter technique **F** p36 **H** p36
Kuh, E.S., and Marek-Sadowska, M. see Marek-Sadowska, M.
Kumar, A., and Malik, O.P. Automatic generation control of interconnected power systems using variable-structure controllers **C** d231
Kumar, Parmod, Indulkar, C.S., and Koihari, D.P. see Indulkar, C.S.
Kumar, U. Comparison between two-dimensional short-channel MOSFET models **I** p37
Kume, H., Takeda, E., Nakagome, Y., and Asai, S. see Takeda, E.
Kuznetsov, S.B., and Laithwaite, E.R. see Laithwaite, E.R.

L

Laithwaite, E.R., and Kuznetsov, S.B. Cage-rotor induction motor with unity power factor **B** d60
Laithwaite, E.R., and Kuznetsov, S.B. Power-factor improvement in linear induction motors **B** d60
Lakshiminarasimha, C.S., Babu Rajendran, T.V., and Naidu, M.S. see Babu Rajendran, T.V.
Lambert, J.E., Halsall, F., Grimsdale, R.L., and Shoja, G.C. see Halsall, F.
Landers, P.H. Improvement of system performance by the use of time-delay elements **D** d92
Lang, R.D., Yee, H., and Hutchinson, M.A. Microprocessor-based identification systems applied to synchronous generators with voltage regulators **C** p257
Lang, S.W., and McClellan, J.H. see McClellan, J.H.
Langley, R.J., Parker, E.A., and Hamdy, S.M.A. see Parker, E.A.
Lau, C.C., and Li, H.F. see Li, H.F.
Lavie, D., and Taylor, W.K. A microprocessor-controlled real-time image processor **E** p149
Laybourn, P.J.R., and Wang, D.K. see Wang, D.K.
Lazarus, M.J., and Pantoja, F.R. Ultra-wideband millimetre-wave self-oscillating mixer **H** p340
Ledwith, A. Chemistry of polymeric resists useful in microlithography **I** p245
Lees, P., Smith, J.R., McAllister, D., and Hughes, J. see Smith, J.R.
Leigh, P.A. Selenium implantation into GaAs for integrated circuits **I** p265
Leite da Silva, A.M., Do Coutto Filho, M.B., and de Queiroz, J.F. State forecasting in electric power systems **C** p237
Leite, J.C.B., and Depledge, P.G. Availability modelling of multiprocessors **E** p165
Leminger, O.G. Scalar mode analysis of parabolic index fibres using continued fractions **H** p290
Leong, M.S., Chua, S.J., and Chan, D.S.H. see Chua, S.J.
Lesz, T., and Olcayto, E. see Olcayto, E.
Leung, C.C., and Tso, S.K. see Tso, S.K.
Levy, R., and Helszajn, J. Short-line matching networks for circulators and resonant loads **H** p385
Lewis, G.J., Bowley, R.M., King, P.J., and Shellard, I. see Bowley, R.M.
Lewis, M. Phase-locked upconvertors in synthesisers for agile pulse-compression radars **H** p456
Li, H.F., and Lau, C.C. Performance evaluation of microprocessor array **E** p65
Liberg, O.A., and Morgan, G.B. Computer simulation of the use of Barker phase codes for the detection of overlapping targets in clutter **F** p557
Lidgate, D., and Whiting, J.P. see Whiting, J.P.
Lier, E., and Jakobsen, K. see Jakobsen, K.
Lim, C.C, and Forsythe, W. Autopilot for ship control, Pt. 1: Theoretical design **D** p281
Lim, C.C., and Forsythe, W. Autopilot for ship control, Pt. 2: Simulation studies **D** p288
Lim, W.Y-P., and Cox, J.R. Clocks and the performance of synchronisers **E** p57
Linkens, D.A. Nonlinear circuit mode analysis (Commissioned IEE review) **A** p69
Lipczynski, R.T., White, B.A., and Daniels, A.R. see White, B.A.
Lipman, N.H., Infield, D.G., Slack, G.W., and Musgrove, P.J. see Infield, D.G.
Lister, A., Kramer, J., Magee, J., and Sloman, M. see Kramer, J.
Litchfield, G.W., and Hunkin, D.J. see Hunkin, D.J.
Litovski, V.B., and Milovanovicu, D.P. New solution for the ideal filter approximation problem **G** p161
Lloyd, M.R. Conservation through design **A** p360
Locattelli, A., Guardabassi, G., Maffezzoni, C., and Schiavoni, N. see Guardabassi, G.
Lockhart, G.B., and Brisson Lopes, L. see Brisson Lopes, L.
Lockwood, M. Simple M-factor algorithm for improved estimation of the basic maximum usable frequency of radio waves reflected from the ionospheric F-region **F** p296
Longo, Maurizio, Conte, Ernesto, D'Addio, Egido, and Farina, Alfonso see Conte, Ernesto
Low, T.S., Binns, K.J., and Jabbar, M.A. see Binns, K.J.
Low, T.S., and Binns, K.J. see Binns, K.J.
Lowe, J.E., and Wiesner, W. Status of Boeing wind-turbine systems **A** p531
Lucas, T.N. Factor division: a useful algorithm in model reduction **D** p362
Lucas, W.C., and Barton, R.S. see Barton, R.S.
Lymer, A., and McGeehan, J.P. see McGeehan, J.P.
Lynch, A.C. Measurements of permittivity using an open resonator **A** p365
Lynch, A.C. Wiring of AC bridge networks **A** p47
Lynch, A.C., Drake, A.E., and Dix, C.H. Measurement of eddy-current conductivity **A** p254
Lynch, A.C., Palmer, A.W., and Parish, A.T. see Palmer, A.W.

M

Machaicy, J. Static model of DH laser **I** p61
Macqueen, J.F., Ainslie, J.F., Milborrow, D.J., Turner, D.M., and Swift-Hook, D.T. Risks associated with wind-turbine blade failures **A** p574
Maffezzoni, C., Guardabassi, G., Locattelli, A., and Schiavoni, N. see Guardabassi, G.

Magee, J., Kramer, J., Sloman, M., and Lister, A. see Kramer, J.
Mahmoud, M.S. Singular-perturbation method for discrete models of continuous systems in optimal control **D** d136
Mahmoud, S.F. Mode conversion on profiled corrugated conical horns **H** p415
Maile, G.L., Webb, J.P., and Ferrari, R.L. see Webb, J.P.
Malik, O.P., and Kumar, A. see Kumar, A.
Manley, B.W. Address as Chairman of the IEE Electronics Division: The information society—the wonder that would be? **A** p15
Manolarakis, M., and Kalouptsidis, N. see Kalouptsidis, N.
Marek-Sadowska, M., and Kuh, E.S. General channel-routing algorithm **G** p83
Marino, P., Picardi, C., and Russo, A. AC characteristics in AC/DC/DC conversion **B** p201
Marlow, B.A., and Hawley, R. see Hawley, R.
Marple, L. S. Jr., and Nuttall, A.H. Experimental comparison of three multichannel linear prediction spectral estimators **F** p218
Marshall, J.E., and Salehi, S.V. Improvement of system performance by the use of time-delay elements **D** d92
Martin, M.A., Johns. A.T., Aggarwal, R.K., and Barker, A. see Johns, A.T.
Martin, M.A., and Johns, A.T. see Johns, A.T.
Martinez, P., Uceda, J., and Aldana, F. see Uceda, J.
Marty, A., Clarac, J., Bailbe, J.P., and Rey, G. Two-dimensional finite-element simulation of a permeable-base transistor **I** p24
Masetti, G., Calzolari, P.U., Graffi, S., and Severi, M. see Calzolari, P.U.
Matsuura, K., and Kinoshita, H. Simplified analysis of transient due to fault initiation on double-ended overhead and underground transmission lines **C** p75
Mavor, J. (Editorial) **I** p1
Mayhan, J.T. Adaptive antenna design considerations for satellite communication antennas **F** p98 **H** p98
McAllister, D., Smith, J.R., Lees, P., and Hughes, J. see Smith, J.R.
McAllister, P. Synthesised signal generator: a design example **H** p451
McCanny, J.V., and McWhirter, J.G. Bit-level systolic array circuit for matrix vector multiplication **G** p125
McClellan, J.H., and Lang, S.W. Duality for multidimensional MEM spectral analysis **F** p230
McDowell, G.R.C. Address as Chairman of the IEE Power Division: BEAMA,BSI,IEE—the interface **A** p31
McGeehan, J.P., and Lymer, A. Acquisition performance of 2nd-order phase-locked loops in the presence of time delay for switched and swept signal conditions **G** p131
McGregor, KevinB., and Griffiths, L.J. see Griffiths, L.J.
McIntosh, D.J., and Sangster, A.J. see Sangster, A.J.
McLean, D. Globally stable nonlinear flight control system **D** p93
McLean, R., Smith, J.R., and Robbie, J.F see Smith, J.R.
McLeay, K., Wright, M.T., and Yang, S.J. see Wright, M.T.
McLeish, D., and Jamieson, P. see Jamieson, P.
McNeil, J.H., Case, S.H., Hayes, A.M., Morrison, R.E., and Riches, E.E. see Case, S.H.
McWhirter, J.G., and McCanny, J.V. see McCanny, J.V.
McWhirter, J.G., and Shepherd, T.J. Adaptive algorithms in the space and time domains **F** p17 **H** p17
McWhirter, J.G., and Shepherd, T.J. Least-squares lattice algorithm for adaptive channel equalisation.A simplified derivation **F** p532
Medeiros Filho, F.C., Jayasuriya, D.A.R., and Cole, R.S. Tropospheric effects on line-of-sight links at 36 GHz and 55 GHz **F** p679
Meiling, G., Noordanus, J., and van Heijningen, P. see Noordanus, J.
Meinel, H., and Plattner, A. Millimetre-wave propagation along railway lines **F** p688
Melkebeek, J.A.A. Magnetising-field saturation and dynamic behaviour of induction machines. Part 2: Stability limits of a voltage-fed induction motor and of a self-excited induction generator **B** p10
Melkebeek, J.A.A. Magnetising-field saturation and dynamic behaviour of induction machines. Part 1: Improved calculation method for induction-machine dynamics **B** p1
Mendrela, E.A., and Fleszar, J. see Fleszar, J.
Miki, S., Koshiji, K., and Shu, E. see Koshiji, K.
Milborrow, D.J. Wake and cluster research: past, present and future **A** p566
Milborrow, D.J., Macqueen, J.F., Ainslie, J.F., Turner, D.M., and Swift-Hook, D.T. see Macqueen, J.F.
Miller, D.M., Muzio, J.C., and Hurst, S.L. see Muzio, J.C.
Mills, C.A. Management for quality **A** p58
Milovanovicu, D.P., and Litovski, V.B. see Litovski, V.B.
Minasian, R.A. Modelling DC characteristics of dual-gate GaAs MESFETs **I** p182
Minasian, R.A. Power MOSFET dynamic large-signal model **I** p73
Mine, H., Ohno, K., and Shioyama, T. Delay analysis of a satellite channel reservation system with variable frame format **F** p343
Mitrakos, D.K., and Constantinides, A.G. Nonlinear image processing for optimum composite source coding **F** p441
Mitrakos, D.K., and Constantinides, A.G. Optimum block quantisation in signal processing **F** p543
Moffatt, A.M., and Holmes, E.J. see Holmes, E.J.
Moglestue, C. Negative differential resistivity in field-effect transistors **I** p275
Mohammed, H.D. Carrier phase predictors for high-speed data transmission systems **F** p173
Mohan, P.V.A., Ramachandran, V., and Swamy, M.N.S. Highpass and bandpass 2nd-order switched-capacitor filters **G** p1
Momen, S., and Evans, E.J. Structurally fixed modes in decentralised systems. Pt. 2: General case **D** p322
Moore, D.J., Bennett, M., and Hamilton, P.M. see Bennett, M.
Moore, P.A., and Salmon, S.K. Surface acoustic wave reference oscillators for UHF and microwave generators **H** p477
Morgan, G.B., and Liberg, O.A. see Liberg, O.A.
Morimoto, S., Takeda, Y., and Hirasa, T. see Takeda, Y.
Morrison, I.F., and Yang, Q.S. see Yang, Q.S.
Morrison, R.E., Case, S.H., Hayes, A.M., McNeil, J.H., and Riches, E.E. see Case, S.H.
Mosig, J.R., and Gardiol, F.E. Analytical and numerical techniques in the Green's function treatment of microstrip antennas and scatterers **H** p175
Moustafa, K.A.F. Identification of stochastic time-varying systems **D** p137
Movaghar, B., and Bloor, D. see Bloor, D.
Müller, W., Beinvogl, W., Risch, L., and Sigusch, R. Submicron MOS process with 10:1 optical-projection printing and anisotropic dry etching **I** p136
Mueller, G.S., and Adeniyi, V.O. Dynamic output feedback controller **D** p28
Munro, N., and Kidd, P.T. see Kidd, P.T.
Musgrove, P.J. Wind energy conversion—an introduction **A** p506
Musgrove, P.J., Infield, D.G., Slack, G.W., and Lipman, N.H. see Infield, D.G.
Musha, T., Sekine, M., Tomita, Y., Hagisawa, T., Irabu, T., and Kiuchi, E. see Sekine, M.
Muthu, C., and Shanmugasundaram, A. see Shanmugasundaram, A.
Muzio, J.C., Miller, D.M., and Hurst, S.L. Multivariable symmetries and their detection **E** p141

N

Naidu, D.S., and Rajagopalan, P.K. see Rajagopalan, P.K.
Naidu, M.S., Babu Rajendran, T.V., and Lakshminarasimha, C.S. see Babu Rajendran, T.V.
Najdi, H.Y., and Clark, A.P. see Clark, A.P.
Nakagome, Y., Takeda, E., Kume, H., and Asai, S. see Takeda, E.
Nakajima, M., and Umeda, H. see Umeda, H.
Nakano, H., Yamane, T., and Yamauchi, J. Directive properties of parasitic helix and its application to circularly polarised antenna **H** p391
Nanda, J., Kothari, M.L., and Satsangi, P.S. Automatic generation control of an interconnected hydrothermal system in continuous and discrete modes considering generation rate constraints **D** p17
Nandi, R., Nandi, S., and Jana, P.B. see Nandi, S.
Nandi, S., Jana, P.B., and Nandi, R. Novel earthed capacitor dual-input tunable ideal integrator with enlarged time constant **G** p159
Narasimhan, M.S., and Prasad, K.H. Coupling between two conical horns placed side by side **H** p358
Neale, D.F., Wang, Y.T., and Wilson, D.R. see Wang, Y.T.
Nenov, G.A. Circuit realisation of products of grounded multiport matrices, using multiport immitance convertors **G** p10
Neylon, S., and Wilkinson, V. Sources based on switched hybrid SAW oscillators **H** p473
Nguyen, D.T., and Ting, L.H. Noise performance of state-space active filters **G** p217
Nguyen, T.T., Humpage, W.D., and Wong, K.P. see Humpage, W.D.
Niblett, C., Ford, G., and Walker, L. see Ford, G.
Nicholls, D.H., and Powell, M.J. see Powell, M.J.
Nicholson, H., and Fernando, K.V. see Fernando, K.V.
Nikolici, S., Stankovici, M., and Tosyici, Z. see Stankovici, M.
Nikolopoulos, P.N., and Diamantopoulos, D.N. Behaviour of pressboard-oil insulation under alternating voltages of industrial frequency in a nonuniform electric field **A** p145
Noordanus, J., Meiling, G., and van Heijningen, P. Direct-division phase-lock loop at 12 GHz **H** p463
Norbury, J.R., and Davies, P.G. see Davies, P.G.
Normile, J.O., and Boland, F.M. Adaptive filtering with finite wordlength constraints **E** p42
Norris, W.T. (Editorial) **A** p157
Nunn, D. Performance assessments of a time-domain adaptive processor in a broadband environment **F** p139 **H** p139
Nuttall, A.H. Analysis of a generalised framework for spectral estimation. Part 2: Reshaping and variance results **F** p242
Nuttall, A.H., and Marple, L. S. Jr., see Marple, L. S. Jr.
Nuttall, Albert H., and Clifford Carter, G. see Clifford Carter, G.

O

Ohno, K., Mine, H., and Shioyama, T. see Mine, H.
Olcayto, E., and Lesz, T. Class of linear cyclic block codes for burst errors occurring in one-, two- and three-dimensional channels **F** p468
Oldham, H.E., and Partridge, S.L. Comparison of MOS processes for VLSI **I** p94
Olver, A.D., and Saleeb, A.A. Improved radiation characteristics of conical horns with plastics-foam lenses **H** p197
Osowski, S. Nonlinear resistive network synthesis **G** p15
Owens, D.H., and Chotai, A. Robust controller design for linear dynamic systems using approximate models **D** p45

P

Pacey, K., Edwards, J.B., and Al-Fileyeh, T.A. see Edwards, J.B.
Pal, A. Logic design using digital summation threshold-logic gates **E** p32
Palanisamy, K.R., and Prasada Rao, G. see Prasada Rao, G.
Palanisamy, K.R., and Rao, G.P. Optimal control of linear systems with delays in state and control via Walsh functions **D** p300
Palmer, A.W., Lynch, A.C., and Parish, A.T. Measurement of piezoelectric coefficients and permittivity with small specimens **A** p129
Pan, Q.R., Singh, M.G., Hassen, M.F., and Chen, Y.L. see Singh, M.G.
Pantoja, F.R., and Lazarus, M.J. see Lazarus, M.J.
Papachristou, Christos.A., and Sarma, Debabrata An approach to sequential circuit construction in LSI programmable arrays **E** p159
Papadopoulos, D.P. General computational method for performing availability analysis of power-system configurations **C** p285
Pappert, R.A., Baumgartner, G.B., and Hitney, H.V. see Baumgartner, G.B.
Parama Raj, K., Clark, A.P., and Slater, M. see Clark, A.P.
Parish, A.T., Palmer, A.W., and Lynch, A.C. see Palmer, A.W.
Park, S.B., Cho, G.H., and Jeon, S.J. see Cho, G.H.
Parker, E.A., Hamdy, S.M.A., and Langley, R.J. Modes of resonance of the Jerusalem cross in frequency-selective surfaces **H** p203
Parker, F.G. Design of electronic equipment for broadcasting **A** p190
Parsons, J.D., Ibrahim, M.F., and Holbeche, R.J. Mobile radio propagation in rural areas at 168, 455 and 896 MHz **F** p701
Parsons, J.D., and Ibrahim, M.F. see Ibrahim, M.F.
Parsons, J.D., and Ibrahim, M.F. Signal strength prediction in built-up areas.Part 2 : Signal variability **F** p385
Partridge, S.L., and Oldham, H.E. see Oldham, H.E.
Patel, H.K., and Dubey, G.K. Harmonic reduction in the static var compensator by sequence control of transformer taps **C** p300
Pathak, V.K., and Gowar, J. Numerical solutions for surface electric field distributions in avalanching *p-i-n* power diodes **I** p17
Patranabis, D., and Ghosh, D.K. Formulas for calculating time constants of RC integrators and differentiators using cascaded resistive L-sections **G** p207
Pearson, D.E. IEE Colloquium on digital filtering of video signals.(Conference report) **F** p191
Pearson, F.W. Safety specification as part of the design brief **A** p292
Peixoto, C.A.O., Frontin, S.O., and Jardini, J.A. Engineering studies for Itaipu convertor station design **C** p41
Penman, J., and Tavner, P.J. see Tavner, P.J.
Peterson, I.R. Langmuir-Blodgett electron-beam resists **I** p252
Pettinga, J.A.J., and Siersema, J. A polyphase 500 kA current measuring system with Rogowski coils **B** p360
Petty, M.C., Baker, S., and Roberts, G.G. see Baker, S.
Phillipson, P.H. Comment on Monopoli's error augmentation scheme **D** p30

Picardi, C., Marino, P., and Russo, A. see Marino, P.
Pimenides, T.G., and Tzafestas, S.G. see Tzafestas, S.G.
Plattner, A., and Meinel, H. see Meinel, H.
Poelman, A.J. Polarisation-vector translation in radar systems F p161
Porter, B. Design of robust digital set-point tracking controllers for linear multivariable plants with time-delayed inputs D e82
Powell, M.J., and Nicholls, D.H. Stability of amorphous-silicon thin-film transistors I p2
Prabhu, S.S., Rao, N.N., and Dubey, G.K. see Rao, N.N.
Prasad, K.H., and Narasimhan, M.S. see Narasimhan, M.S.
Prasada Rao, G., and Palanisamy, K.R. Improved algorithms for parameter identification in continuous systems via Walsh functions D p9
Premoli, A. Upper-bounded pole-Q approximation for active filters G p65
Price, C.F., and Gibbon, R.R. Statistical approach to thermal rating of overhead lines for power transmission and distribution C p245
Priel, B., and Shaked, U. Multivariable Nyquist plot of discrete-time stationary optimal linear filters D p128
Prime, H.A. Address as Chairman of the IEE Computing & Control Division: The development of tracking systems A p8
Proudfoot, C.G., Gawthrop, P.J., and Jacobs, O.L.R. Self-tuning PI control of a pH neutralisation process D p267
Proudfoot, J.T., Dagless, E.L., and Edwards, M.D. see Dagless, E.L.
Purssell, R.F. Harnessing Murphy's Law A p364

Q

Qadeer, A., Bryant, F.J., and Reed, J. see Bryant, F.J.
Qi-Jie, Zhou, and Sinha, N.K. see Sinha, N.K.

R

Radmanovič, M.Dj., and Rakovich, B.D. see Rakovich, B.D.
Radouane, L., and Hmamed, A. see Hmamed, A.
Rajagopalan, P.K., and Naidu, D.S. Singular-perturbation method for discrete models of continuous systems in optimal control D d136
Rakovich, B.D., and Radmanovič, M.Dj. Some comparisons of approximation techniques in the design of delay-equalised selective filters G p53
Ralph, J.W., and Williamson, S. see Williamson, S.
Ralph, M.C., and Cory, B.J. Editorial C p97
Ram, Babu, Balasubramanian, R., and Tripathy, S.C. see Balasubramanian, R.
Ramalyer, S., Ramachandran, K., and Hariharan, S. New technique for optimal reactive-power allocation for loss minimisation in power systems C p178
Ramachandran, K., Ramalyer, S., and Hariharan, S. see Ramalyer, S.
Ramachandran, V., Mohan, P.V.A., and Swamy, M.N.S. see Mohan, P.V.A.
Ramshaw, R.S., and Xie, G. Mathematical model and electric-circuit simulation of DC machines B p218
Rangi, R.S., and Templin, R.J. see Templin, R.J.
Rao, G.P., and Palanisamy, K.R. see Palanisamy, K.R.
Rao, M.K.N., Haslett, J.W., and Bhagwan, J. see Haslett, J.W.
Rao, N.D., and Roy, L. see Roy, L.
Rao, N.N., Dubey, G.K., and Prabhu, S.S. Slip-power recovery scheme employing a fully controlled convertor with half-controlled characteristics B p33
Rashid, M.H. Design of LC input filter for multi-phase DC choppers B p39
Ratner, A.S., Hudson, J.E., and Cantoni, A.C. see Hudson, J.E.
Raut, R., and Bhattacharyya, B.B. see Bhattacharyya, B.B.
Redinbo, G.R., and Wang, G.X. Probability of error in combinational logic systems containing soft fails E p125
Redstall, M.W., and White, T.A. Subjective quality of a 70 Mbits digital codec for colour television F p477
Reed, I.S., Yeh, C.S., and Truong, T.K. see Yeh, C.S.
Reed, J., Bryant, F.J., and Qadeer, A. see Bryant, F.J.
Rendina, R., and Rezsöfi, F. see Rezsöfi, F.
Revankar, G.N., and Gharpure, V.S. see Gharpure, V.S.
Rey, G., Marty, A., Clarac, J., and Bailbe, J.P. see Marty, A.
Reza, F.M. The energy spread of electrical systems G p165
Rezsöfi, F., and Rendina, R. Foundation uplift resistance: the effects of foundation type and of seasonal changes in ground conditions C d232
Rhodes, J.D. Setting up small high-technology companies A p398
Richards, G.G., and Tan, O.T. Fault location for transmission lines with current-transformer saturation C p22
Riches, E.E., Case, S.H., Hayes, A.M., McNeil, J.H., and Morrison, R.E. see Case, S.H.
Riley, M.M., Austin, G.L., and Ballantyne, E.H. see Austin, G.L.
Risch, L., Müller, W., Beinvogl, W., and Sigusch, R. see Müller, W.
Robbie, J.F, Smith, J.R., and McLean, R. see Smith, J.R.
Roberts, G.G. Molecular electronics.(Editorial) I p197
Roberts, G.G., Baker, S., and Petty, M.C. see Baker, S.
Robins, W.P. Low-phase-noise synthesisers for SHF satcom H p445
Robson, A. Environmental aspects of large-scale wind-power systems in the UK A p620
Rodger, D. Finite-element method for calculating power frequency 3-dimensional electromagnetic field distributions A p233
Rofail, S.S. Transit and storage times of bipolar transistors in a VLSI environment I p151
Rotherham, S. Radiowave propagation (Editorial) F p577
Roy, L., and Rao, N.D. Real-time monitoring of power systems using fast second-order method C p103
Russo, A., Marino, P., and Picardi, C. see Marino, P.
Ryff, P.F. Calculation of arc-circuit asymmetry in electric-arc furnaces B p213

S

Saad, A.M.K. Analysis of fin-line tapers and transitions H p230
Sahalos, J.N., Zimourtopoulos, P.E., and Thiele, G.A. see Zimourtopoulos, P.E.
Sahba, M. Computer-aided design of feedback controllers for nonlinear systems with applications to control of a double-inverted pendulum D p350
Sahba, M. Optimal control of power system generators incorporating nonlinear state feedback D p345
Saleeb, A.A., and Olver, A.D. see Olver, A.D.
Salehi, S.V., and Marshall, J.E. see Marshall, J.E.
Salerno, M., Cristina, S., and D'Amore, M. see Cristina, S.
Sali, S., Benson, F.A., and Sitch, J.E. General cross-talk equations between two braided coaxial cables in free space A p306
Salmer, G. Physical frequency limitations of 2-terminal devices I p80
Salmon, S.K., and Moore, P.A. see Moore, P.A.
Salomone, G., and Torelli, G. see Torelli, G.
Sandoz, D.J., Thomas, H.W., and Thomson, M. see Thomas, H.W.
Sangster, A.J., and McIntosh, D.J. Analysis of an end junction between a coaxial waveguide,with a hollow inner,and a circular cylindrical waveguide H p297
Saramaki, T. Computationally efficient narrowband linear-phase FIR filters G p20
Sarma, Debabrata, and Papachristou, Christos.A. see Papachristou, Christos.A.
Satsangi, P.S., Nanda, J., and Kothari, M.L. see Nanda, J.
Saubion, C., de Fornel, B., Hapiot, J.C., and Trannoy, B. see de Fornel, B.
Scherer, E., Slinn, K.R., and Volckman, P.A. see Slinn, K.R.
Schiavoni, N., Guardabassi, G., Locattelli, A., and Maffezzoni, C. see Guardabassi, G.
Schünemann, K., and Knöchel, R. see Knöchel, R.
Schwarz, K.K. The many facets of engineering design A p196
Scott, K.K. Transversal filter techniques for adaptive array applications F p29 H p29
Searle, J.G., and Ward, C.R. Multifunction adaptive processor for small antenna arrays F p57 H p57
Sekine, M., Musha, T., Tomita, Y., Hagisawa, T., Irabu, T., and Kiuchi, E. Weibull - distributed sea clutter F p476
Severi, M., Calzolari, P.U., Graffi, S., and Masetti, G. see Calzolari, P.U.
Shafai, L., and Barakat, M. see Barakat, M.
Shah, S.L., Coppus, G.W.M., and Wood, R.K. see Coppus, G.W.M.
Shaked, U., and Priel, B. see Priel, B.
Shanks, I.A. Liquid-crystal displays: an established example of molecular electronics I p198
Shanmugasundaram, A., and Muthu, C. Dynamic braking performance of double-sided linear induction motors by circle diagram B p449
Sharman, K.C., and Durrani, T.S. see Durrani, T.S.
Sharman, K.C., and Durrani, T.S. Spatial lattice filter for high-resolution spectral analysis of array data F p279
Sharp, J., and Helszajn, J. see Helszajn, J.
Shearman, E.D.R. Propagation and scattering in MF/HF groundwave radar F p579
Sheldon, D.F. The present state of the art on computer-aided draughting and design A p173
Shellard, I., Bowley, R.M., King, P.J., and Lewis, G.J. see Bowley, R.M.
Shepherd, G.T. Address as chairman of the IEE South Midlands Centre: The organisation of electricity supply in the UK—a personal view C p148
Shepherd, P.R., and Vilar, E. Optimisation and synthesis of low phase-noise microwave-feedback oscillators H p437
Shepherd, T.J., and McWhirter, J.G. see McWhirter, J.G.
Shichijo, Hisashi, Chatterjee, P.K., and Yang, Ping see Chatterjee, P.K.
Shieh, L.S., Tsay, Y.T., and Yates, R.E. Some properties of matrix sign functions derived from continued fractions D p111
Shieh, L.S., Wang, C.T., and Tsay, Y.T. Fast sub-optimal state-space self-tuner for linear stochastic multivariable systems D p143
Shih, Fu-Yih Design algorithms for digital control systems with deadbeat unit step response D p119
Shin, Y.P., Hwang, C., and Guo, T.Y. see Hwang, C.
Shioyama, T., Mine, H., and Ohno, K. see Mine, H.
Shoja, G.C., Halsall, F., Grimsdale, R.L., and Lambert, J.E. see Halsall, F.
Short, M.J., and Ekwue, A.O. see Ekwue, A.O.
Shu, E., Koshiji, K., and Miki, S. see Koshiji, K.
Sibbald, A. Chemical-sensitive field-effect transistors I p233
Siersema, J., and Pettinga, J.A.J. see Pettinga, J.A.J.
Sigusch, R., Müller, W., Beinvogl, W., and Risch, L. see Müller, W.
Simmons, S., Chan, Y.T., and Inkol, R. see Chan, Y.T.
Simons, R.N. Analysis of millimetre-wave integrated fin line H p166
Simpson, R.J., Daly, S.A., and de Paor, A.M. see Daly, S.A.
Singer, S. Energy storage and flow control by means of a 2-port, time-variable coupling network G p7
Singh, M.G., Hassen, M.F., Chen, Y.L., and Pan, Q.R. New approach to failure detection in large-scale systems D p243
Singhal, K., and Jain, N.K. see Jain, N.K.
Sinha, A.K., and Gunn, D.J. see Gunn, D.J.
Sinha, N.K., and Qi-Jie, Zhou Discrete-time approximation of multivariable continuous-time systems D p103
Sirisena, H.R., and Brown, E.P.M. Representation of non-Gaussian probability distributions in stochastic load-flow studies by the method of Gaussian sum approximations C p165
Sitch, J.E., Sali, S., and Benson, F.A. see Sali, S.
Siu, W., and Constantinides, A.G. Very fast discrete Fourier transform, using number theoretic transform G p201
Siu, W.C., and Chen, C.F. New realisation technique of high-speed discrete Fourier transform described by distributed arithmetic E p177
Slack, G.W., Infield, D.G., Lipman, N.H., and Musgrove, P.J. see Infield, D.G.
Slater, M., Clark, A.P., and Parama Raj, K. see Clark, A.P.
Slinn, K.R. Microwave sources and synthesisers H p429
Slinn, K.R., Volckman, P.A., and Scherer, E. Low-noise synthesiser for radar and communications H p430
Slivnik, T. Toroid immersed in a homogeneous electric field A p261
Sloman, M., Kramer, J., Magee, J., and Lister, A. see Kramer, J.
Slonim, M. Joule adiabatic heating of high-resistance alloys A p239
Smith, A.C., and Williamson, S. see Williamson, S.
Smith, B.H., and Cook, C.D. see Cook, C.D.
Smith, I.R., Kettleborough, J.G., and Fanthome, B.A. see Kettleborough, J.G.
Smith, I.R., and Tez, E.S. see Tez, E.S.
Smith, I.R., and Tez, E.S. Mathematical model and characteristics of parametric transformers B d69
Smith, J.R., Lees, P., McAllister, D., and Hughes, J. Experimental and numerical investigation of field conditions associated with the transport of low-conductivity liquids and powders A p369
Smith, J.R., McLean, R., and Robbie, J.F Assessment of hydroturbine models for power-systems studies C p1
Smith, M.S., and Guo, Y.C. see Guo, Y.C.
Smith, W.J., and Yacamini, R. see Yacamini, R.
Sobhy, M.I., and Surakampontorn, W. see Surakampontorn, W.
Sood, A.K. Design of multistage interconnection networks E p109
Spence, R., and Huanca, J. see Huanca, J.
Spickernell. D.G. The contribution of the British Standards Institution A p299
Spickernell, Rear Admiral D.G. Design for quality A p159
Stacey, F.W. Contribution of labelling, instructions and warnings to safety in design A p296

Stankovici, M., Tosyici, Z., and Nikolici, S. Synthesis of Maitra cascades by means of spectral coefficients **E** p101
Stavroulakis, P., and Tzafestas, S.G. State reconstruction in low-sensitivity design of 3-dimensional systems **D** p333
Steele, A.K. Comparison of directional and derivative constraints for beamformers subject to multiple linear constraints **F** p41 **H** p41
Stenberg, L.J. Modified strong-inversion potential for accurate modelling of long-channel MOS transistors **I** p57
Sterling, M.J.H., and Irving, M.R. see Irving, M.R.
Stey, G.C. Upper bounds on time jitter and sampling rate errors **G** p210
Stone, D. Open-loop adaptivity for rotating antennas **F** p114 **H** p114
Strecker, T.E., and Bruton, L.T. see Bruton, L.T.
Stuchly, M.A., and Stuchly, S.S. Industrial, scientific, medical and domestic applications of microwaves (Commissioned IEE review) **A** p467
Stuchly, S.S., and Stuchly, M.A. see Stuchly, M.A.
Subbiah, M., Chidambaram, P., Kamath, A.A., and Krishnamurthy, M.R. see Chidambaram, P.
Subrahmanyam, V. Analysis of commutation of a current-source inverter feeding an induction motor,using 2-axis variables **B** p355
Sunami, Hideo., and Itoh, Kiyoo. see Itoh, Kiyoo.
Sundberg, Carl-Erik, and Aulin, Tor see Aulin, Tor
Surakampontorn, W., and Sobhy, M.I. Self-error feedback in recursive digital filters **G** p205
Swain, R.S. 19 GHz digital radio-relay and the weather **F** p506
Swamy, M.N.S., Mohan, P.V.A., and Ramachandran, V. see Mohan, P.V.A.
Sweet, D.R. Performance of stochastic gradient descent adaptive beamforming using sonar data **F** p147 **H** p147
Swift-Hook, D.T., Macqueen, J.F., Ainslie, J.F., Milborrow, D.J., and Turner, D.M. see Macqueen, J.F.
Swift-Hook, D.T., and Taylor, R.H. Wind power (Editorial) **A** p505

T

Taalab, A.M.I., and Yacamini, R. see Yacamini, R.
Takeda, E., Nakagome, Y., Kume, H., and Asai, S. New hot-carrier injection and device degradation in submicron MOSFETs **I** p144
Takeda, Y., Morimoto, S., and Hirasa, T. Generalised analysis for steady-state characteristics of DC commutatorless motors **B** p373
Tan, E.C. The analytical transfer functions of wave-digital filters derived from LC ladder prototypes **G** p185
Tan, O.T., and Richards, G.G. see Richards, G.G.
Tantaratana, S. Performance of a two-stage non-parametric conditional detector for Rician density **F** p331
Tate, C.N., and Goodyear, C.C. Note on the convergence of linear predictive filters, adapted using the LMS algorithm **G** p61
Tate, R.L.C. Lighting of cathedrals and churches (Commissioned IEE review) **A** p442
Tavner, P.J., and Penman, J. Currents flowing in the stator-core frames of large electrical machines **C** p273
Taylor, G.J. Wake and performance measurements on the Lawson-Tancred 17 m horizontal-axis windmill **A** p604
Taylor, G.N. Adaptive arrays.(Editorial) **F** p1 **H** p1
Taylor, J.W. Sacrifices in radar clutter suppression due to compromises in implementation of digital Doppler filters **F** d574
Taylor, R.H., and Swift-Hook, D.T. see Swift-Hook, D.T.
Taylor, W.K., and Lavie, D. see Lavie, D.
Templin, R.J., and Rangi, R.S. Vertical-axis wind turbine development in Canada **A** p555
Teoh, E.K., Goodwin, G.C., and Elliott, H. see Goodwin, G.C.
Tez, E.S., and Smith, I.R. see Smith, I.R.
Tez, E.S., and Smith, I.R. Energy-transfer mechanism and current waveforms of parametric transformers **B** p181
Thiele, G.A., Zimourtopoulos, P.E., and Sahalos, J.N. see Zimourtopoulos, P.E.
Thomas, H.W., Sandoz, D.J., and Thomson, M. New desaturation strategy for digital PID controllers **D** p188
Thomson, M., Thomas, H.W., and Sandoz, D.J. see Thomas, H.W.
Thring, M.W. Long-term management of energy **A** p281
Timotin, A., Gray, C., and Cristescu, D. see Gray, C.
Ting, L.H., and Nguyen, D.T. see Nguyen, D.T.
Tipping, D., and Hesmondhalgh, D.E. see Hesmondhalgh, D.E.
Tomita, Y., Sekine, M., Musha, T., Hagisawa, T., Irabu, T., and Kiuchi, E. see Sekine, M.
Tomlinson, H. Address as Chairman of the IEE Management & Design Division: Productive labour **A** p19
Tong, K.Y. AC model for MOS transistors from transient-current computations **I** p33
Torelli, G., and Salomone, G. Integrated protection circuits against the forward biasing of the input junction in digital MOS ICs **I** p187
Tosyici, Z., Stankovici, M., and Nikolici, S. see Stankovici, M.
Trannoy, B., de Fornel, B., Hapiot, J.C., and Saubion, C. see de Fornel, B.
Tredgold, R.H., and Winter, C.S. see Winter, C.S.
Tremayne, J.F. Impedance and phase balancing of mains-frequency induction furnaces **B** p161
Tripathy, S.C., Balasubramanian, R., and Ram, Babu see Balasubramanian, R.
Truong, T.K., Yeh, C.S., and Reed, I.S. see Yeh, C.S.
Trutt, F.C., and Tylavsky, D.J. see Tylavsky, D.J.
Tsay, Y.T., Shieh, L.S., and Wang, C.T. see Shieh, L.S.
Tsay, Y.T., Shieh, L.S., and Yates, R.E. see Shieh, L.S.
Tsiboukis, T.D., and Hammond, P. see Hammond, P.
Tsitsovits, A.J., and Freris, L.L. Dynamics of an isolated power system supplied from diesel and wind **A** p587
Tso, S.K., and Leung, C.C. Microprocessor control of triac cycloconvertor **B** p193
Tuffs, P.S., Clarke, D.W., and Hodgson, A.J.F. see Clarke, D.W.
Turner, D.M., Macqueen, J.F., Ainslie, J.F., Milborrow, D.J., and Swift-Hook, D.T. see Macqueen, J.F.
Turner, L.E. Elimination of constant-input limit cycles in recursive digital filters using a generalised minimum norm **G** p69
Turner, L.F., and Clarke, P.N. see Clarke, P.N.
Turner, L.F., and Foo, S.W. see Foo, S.W.
Twemlow, J.K., and Edwards, J.B. see Edwards, J.B.
Tylavsky, D.J., and Trutt, F.C. Terminal behaviour of the uncontrolled R-L fed 3-phase bridge rectifier **B** e142
Tzafestas, S.G., and Pimenides, T.G. Transfer function computation and factorisation of 3-dimensional systems in state-space **D** p231
Tzafestas, S.G., and Stavroulakis, P. see Stavroulakis, P.

U

Uceda, J., Aldana, F., and Martinez, P. Active filters for static power convertors **B** p347
Umeda, H., and Nakajima, M. Four-phase characteristics of a multimode oscillator with second and third harmonic oscillations **G** p257
Upadhya, R., Choudhury, J.K., and Bhattacharyya, S.N. see Choudhury, J.K.

V

Valenzuela, R.A., and Constantinides, A.G. Digital signal processing schemes for efficient interpolation and decimation **G** p225
Vandenput, A., Hameed, A., Belmans, R., Geysen, W., and Jordan, H. see Hameed, A.
van Heijningen, P., Noordanus, J., and Meiling, G. see Noordanus, J.
Vanner, M.J. Foundation uplift resistance: the effects of foundation type and of seasonal changes in ground conditions **C** d232
Vas, P., and Hargis, C. see Hargis, C.
Vijh, A.K., Guile, A.E., and Dimoff, K. see Guile, A.E.
Vilar, E., and Shepherd, P.R. see Shepherd, P.R.
Vingron, P. Coherent design of asynchronous circuits **E** p190
Volckman, P.A., Slinn, K.R., and Scherer, E. see Slinn, K.R.
Voon, W.S.F., and Billings, S.A. see Billings, S.A.

W

Walker, L., Ford, G., and Niblett, C. see Ford, G.
Wallis, P.J.L. Ada model arithmetic: costs and benefits **E** e139
Wang, C.T., Shieh, L.S., and Tsay, Y.T. see Shieh, L.S.
Wang, D.K., and Laybourn, P.J.R. Coupling between prism and rectangular optical waveguide **H** p255
Wang, G.X., and Redinbo, G.R. see Redinbo, G.R.
Wang, Y.T., Wilson, D.R., and Neale, D.F. Heat-pump control **D** p328
Ward, C.J., and Forrest, J.R. Fast acquisition phase-locked loops for frequency agile pulsed radar systems **H** p489
Ward, C.R., and Hargrave, P.J. Problems associated with correlation-loop adaptive antennas employing hard limiting **F** p63 **H** p63
Ward, C.R., and Searle, J.G. see Searle, J.G.
Wardrop, B. Experimental linear phased array with partial adaptivity **F** p118 **H** p118
Watson, D.B., Faithfull, L.M., and Williams, N.J. Influence of electric fields on flying insects **A** p390
Watson, I., and daSilva, J.G.D. see daSilva, J.G.D.
Webb, A.C. Computerised in-situ testing of feeder protections **C** p51
Webb, J.K. Electronic steering of antenna nulls for interference reduction **F** p417
Webb, J.P., Maile, G.L., and Ferrari, R.L. Finite-element solution of three-dimensional electromagnetic problems **H** p153
Webb, P.W. Measurement of thermal transients in semiconductor power devices and circuits **I** p153
Webb, P.W. Numerical simulation of microstrip Baritt oscillators **I** p297
Wellstead, P.E. Multivariable pole assignment self-tuning regulator **D** d200
Wesolowski, K. Computer generation of a slowly varying pseudorandom process **F** p314
West, R. Engineering management for women **A** p101
Wheeler, C.B. Space-charge-limited bipolar current flow between coaxial cylindrical electrodes **A** p43
Wheeler, J.C.G. Testing of solid-core insulators for use on BR 25 kV electrification **B** p278
Wheeler, J.C.G., and Bradwell, A. see Bradwell, A.
White, B.A. Reduced-order switching functions in variable-structure control systems **D** p33
White, B.A., Lipczynski, R.T., and Daniels, A.R. A simple digital control scheme for a DC motor **B** p143
White, T.A., and Redstall, M.W. see Redstall, M.W.
Whiteaway, J.E.A. Simulation and measurement of C/V doping profiles in multilayer structures **I** p165
Whitfield, D. Ergonomics: designing for the user **A** p162
Whiting, J.P., and Lidgate, D. Computer prediction of IDMT relay settings and performance for interconnected power systems **C** p139
Whittington, H.W., and Jordan, J.R. Operation and control of a 2GW wave-energy scheme **A** p340
Wickenden, J.T., and Curtis, T.E. see Curtis, T.E.
Widl, W., and Kaltenecker, A. see Kaltenecker, A.
Wiesner, W., and Lowe, J.E. see Lowe, J.E.
Wilkinson, V., and Neylon, S. see Neylon, S.
Williams, N.J., Watson, D.B., and Faithfull, L.M. see Watson, D.B.
Williamson, S. Power-factor improvement in cage-rotor induction motors **B** p121
Williamson, S., and Ralph, J.W. Finite-element analysis of an induction motor fed from a constant-voltage source **B** p18
Williamson, S., and Smith, A.C. Steady-state analysis of 3-phase cage motors with rotor bar and end-ring faults **B** d225
Wilson, D.R., Wang, Y.T., and Neale, D.F. see Wang, Y.T.
Wilson, G. An insensitive adjustable allpass network **G** p213
Winter, C.S., and Tredgold, R.H. Control of Schottky-diode-barrier height by Langmuir-Blodgett monolayers **I** p256
Wiszniewski, A. Accurate fault impedance locating algorithm **C** p311
Wong, K.M., and Jan, Y.G. Adaptive Walsh equaliser for data transmission **F** p153
Wong, K.P. Digital simulator of transformer windings subject to impulse voltage **C** d91
Wong, K.P., Humpage, W.D., and Nguyen, T.T. see Humpage, W.D.
Wong, K.P., and Humpage, W.D. see Humpage, W.D.
Wood, A.B., and Kennedy, M.W. The role of the consulting engineer in the design of high-voltage power transmission projects overseas **A** p202
Wood, R.K., Coppus, G.W.M., and Shah, S.L. see Coppus, G.W.M.
Woods, D. Simplified calibration technique for general six-port reflectometer requiring only two coaxial airline standards **A** p250
Woods, J.V., and Casaca, A.J.D. see Casaca, A.J.D.
Woodward, J.L., Elder, J.M., and Boys, J.T. see Elder, J.M.
Wright, M.T., Yang, S.J., and McLeay, K. General theory of fast-fronted interturn voltage distribution in electrical machine windings **B** p245
Wright, M.T., Yang, S.J., and McLeay, K. The influence of coil and surge parameters on transient interturn voltage distribution in stator windings **B** p257

X

Xie, G., and Ramshaw, R.S. see Ramshaw, R.S.

Y

Yaacob, M., Hartley, M.G., and Depledge, P.G. Operational fault-tolerance microcomputer for very high reliability **E** p90

Yacamini, R., and Smith, W.J. Third-harmonic current from unbalanced AC/DC convertors **C** p122
Yacamini, R., and Taalab, A.M.I. Steady-state stability of an HVDC system using frequency-response methods **C** p194
Yamane, T., Nakano, H., and Yamauchi, J. see Nakano, H.
Yamashita, Takahiko, Hara, Masanori, and Akazaki, Masanori see Hara, Masanori
Yamauchi, J., Nakano, H., and Yamane, T. see Nakano, H.
Yang, Ping, Chatterjee, P.K., and Shichijo, Hisashi see Chatterjee, P.K.
Yang, Q.S., and Morrison, I.F. Microprocessor-based algorithm for high-resistance earth-fault distance protection **C** p306
Yang, S.J., Wright, M.T., and McLeay, K. see Wright, M.T.
Yates, R.E., Shieh, L.S., and Tsay, Y.T. see Shieh, L.S.
Yee, H., Lang, R.D., and Hutchinson, M.A. see Lang, R.D.
Yeh, C.S., Reed, I.S., and Truong, T.K. Parallel architectures for computing cyclic convolutions **F** p409
Yeung, L.F., and Bryant, G.F. see Bryant, G.F.
Yokozuka, T. Optimum design of shaded-pole motors by means of 2-phase symmetrical components **B** p341

Z

Zafrullah, A., Jamal, H., and Holmes, F.E. see Jamal, H.
Zambrano, T.G., and Gyatt, G.W. Wake structure measurements at the MOD-2 cluster test facility at Goodnoe Hills, Washington **A** p562
Zimmels, Y. Simulation of rectangular arrays of large charged cylinders of alternating sign by sets of line chargers **A** p242
Zimourtopoulos, P.E., Sahalos, J.N., and Thiele, G.A. Input impedance of a monopole antenna on a finite polygonal ground plane **H** p276
Zinober, A.S.I., El-Ghezawi, O.M.E., and Billings, S.A. see El-Ghezawi, O.M.E.

Addresses

Banks, J. Address as IEE President: The engineer in the middle ground of manufacture **A** p1
Davidson, C.W. Address as Chairman of the IEE Science, Education & Technology Division: Education for technology **A** p36
Harrison, W.K. Address as chairman of the IEE North Eastern Centre: Electricity supply—the changing phases **C** p269
Manley, B.W. Address as Chairman of the IEE Electronics Division: The information society—the wonder that would be? **A** p15
McDowell, G.R.C. Address as Chairman of the IEE Power Division: BEAMA,BSI,IEE—the interface **A** p31
Prime, H.A. Address as Chairman of the IEE Computing & Control Division: The development of tracking systems **A** p8
Shepherd, G.T. Address as chairman of the IEE South Midlands Centre: The organisation of electricity supply in the UK — a personal view **C** p148
Tomlinson, H. Address as Chairman of the IEE Management & Design Division: Productive labour **A** p19

Guide to subject index

Acoustics (*See* Acoustoelectric effects and sound broadcasting and audio)
Acoustoelectric effects
Active networks
Actuators (*See* Transducers)
Adaptive control
Algebra (incl. matrix algebra) (*See* Mathematical techniques)
Algorithms (*See* Mathematical techniques)
Amplifiers
Analogue computers and computation
Analogue-digital conversion
Antennas
Arcing
Attenuators (*See* Instrumentation and measuring science)
Audio (*See* Sound broadcasting and audio)
Avionics
Batteries and cells
Biomedical engineering
Bipolar transistors
Boolean algebra (*See* Logic)
Breakdown and gas discharges
Cables and overhead lines (*See also* Coaxial cables)
Calibration (*See* Instrumentation and measuring science)
Charge-coupled devices
Choppers (*See* Control equipment and applications)
Circuit breakers and circuit breaking
Circuit theory and design
Closed-loop systems
Coaxial cables (*See also* Cables and overhead lines)
Codes and decoding
Commutation
Components
Computer applications
Computer graphics
Computer simulation
Computer-aided design
Conductors and conductivity
Control equipment and applications
Control systems
Control theory
Convertors
Cybernetics and robotics
Decoding (*See* Codes and decoding)
Delay lines
Demodulation (*See* Modulation)
Detection
Dielectrics
Digital arithmetic (*See* Digital computers and computation)
Digital circuits
Digital communication systems
Digital computers and computation
Digital control (*See* Digital computers and computation)
Digital instrumentation (*See* Instrumentation and measuring science)
Diodes
Discharges, electric (*See* Arcing)
Discharges, gas (*See* Breakdown and gas discharges)
Distribution networks (*See* Power transmission)
Doping
Earthing (*See* System protection)
Eddy currents
Education and training
Electric shock (*See* Hazards)
Electromagnetics
Electron devices
Electronic circuits (*See* Circuit theory and design)
Energy conversion and storage
Engineering administration and management
Epitaxy
Errors and error analysis
Fault Location
Feedback
Ferrites and ferromagnetics
Ferromagnetics (*See* Ferrites and ferromagnetics)
Fibres, optical (*See* Optics)
Field-effect transistors
Filters and filtering
Fuel cells (*See* Batteries and cells)
Generators
Graph theory and topology
Gunn devices
Hazards
History (*See also* Reviews of progress)
Holography (*See* Optics)
Hysteresis
Image processing
Induction motors
Industrial applications of power (*See* Power utilisation and industrial applications)
Information and communication theory
Instrumentation and measuring science
Insulators and insulation
Integrated circuits (*See also* Circuit theory and design)
Integrated optics (*See* Optics)
Interface states
Interference (*See* Noise and interference)
Inverters (*See* Power electronics)
Ionisation (*See* Breakdown and gas discharges)
Ionospheric propagation (*See* Radio-wave propagation)
Lasers
Lighting
Lightning and lightning protection
Linear motors
Linear networks (*See* Networks)
Load and voltage regulation
Logic
Magnetic devices and properties
Magnetic fields
Mathematical techniques
Matrix algebra (*See* Mathematical techniques)
Measurement and measuring (*See* Instrumentation and measuring science)
Metal-insulator-semiconductor structures
Metal-oxide-semiconductor structures
Microprocessors
Microscopes
Microwave circuits and networks
Microwave components
Microwave measurements
Microwave systems
Modelling (*See* Simulation)
Modulation
Motors (*See also* Induction motors, linear motors, reluctance motors, stepping motors, synchronous motors)
Motors, induction (*See* Induction motors)
Motors, linear (*See* Linear motors)
Motors, reluctance (*See* Reluctance motors)
Motors, stepping (*See* Stepping motors)
Motors, synchronous (*See* Synchronous motors)
Multivariable control systems (*See also* Control equipment and applications)
Natural Resources
Networks (*See also* Telephone exchanges and networks)
Noise and interference
Nonlinear systems
Numerical analysis
Optical fibres (*See* Optics)
Optical processing (*See* Signal processing and optics)
Optical systems (*See* Optics)
Optical transmission (*See* Optics)
Optics
Optimal control
Optimisation
Optoelectronics
Oscillators (*See* Semiconductor devices and materials)
Overhead lines (*See* Cables and overhead lines)
Overvoltages (*See* System protection)
Pattern recognition (*See* Picture processing and pattern recognition)
Perturbation theory
Phasing and phase control
Physical properties
Picture processing and pattern recognition
Plasmas
Poles and zeros
Polynomials (*See* Mathematical techniques)
Power conversion (*See* Transformers)
Power electronics
Power system protection (*See also* System protection)
Power systems and plant
Power transmission and distribution (*See also* Transmission and distribution plant)
Power utilisation and industrial applications
Process control (*See also* Control theory)
Production engineering (*See* Project and production engineering)
Project and production engineering (*See also* Engineering administration and management)
Pulse-code modulation
Quantum electronics
Radar and radionavigation
Radiation
Radio waves (*See* Radio-wave propagation)
Radio-wave propagation (incl. Ionospheric and tropospheric)
Radiocommunication
Radionavigation (*See* Radar and radionavigation)
Railway electrification and transportation
Receivers
Relays (*See also* System protection)
Reliability
Reluctance motors
Reviews of progress
Robotics (*See* Cybernetics and robotics)
Satellite links and space communication
Schottky-barrier devices
Semiconductor devices and materials (*See also* Diodes, thyristors and transistors)
Semiconductor lasers
Servomotors
Signal processing
Simulation
Solar cells (*See also* Energy conversion and storage)
Sonics and ultrasonics
Sound broadcasting and audio
Space communication (*See* Satellite links and space communication)
Speech synthesis
Stabilisers (*See* Stability)
Stability
Standardisation and standards
Stepping motors
Superconductivity
Surface-acoustic-wave (SAW) devices
Switches and switching theory
Switchgear
Synchronous generators (*See* Generators)
Synchronous motors
System protection
Telecommunication (*See also* Radiocommunication)
Telecommunication traffic (*See* Telecommunication)
Telemetry
Telephone exchanges and networks
Telephony
Teletext
Television
Thyristors (*See also* Semiconductor devices and materials)
Topology (*See* Graph theory and topology)
Torque (*See* Motors)
Traction (*See* Railway electrification and transportation)
Transducers
Transformers
Transients
Transistors (*See also* Semiconductor devices and materials)
Transmission and distribution plant (*See also* Power transmission and distribution)
Transmission-lines
Transmitters
Transportation (*See* Vehicles and transportation)
Tropospheric propagation (*See* Radiowave propagation)
Turbogenerators (*See* Generators)
Ultrasonics (*See* Sonics and ultrasonics)
Underground cables (*See* Cables and overhead lines)
Vehicles and transportation
Very large scale integration
Vibration
Vocoders (*See* Voice communication)
Voice communication
Voltage regulators (*See* Load and voltage regulation)
Waveguides
Wind power (*See* Energy conversion and storage)
X-rays

Lectures

George, W.W. Contrasts in management styles—Europe and the USA A p288

IEE commissioned reviews

Allison, J., and Benson, F.A. Undergraduate projects and their assessment A p402
Benson, F.A. Reviewing the reviews (Editorial) A p401
Hargroves, R.A. Road lighting A p420
Linkens, D.A. Nonlinear circuit mode analysis A p69
Stuchly, M.A., and Stuchly, S.S. Industrial, scientific, medical and domestic applications of microwaves A p467
Tate, R.L.C. Lighting of cathedrals and churches A p442

Subject index

Optimisation and synthesis of low phase-noise microwave-feedback oscillators. P.R. Shepherd and E. Vilar H p437

ACOUSTICS

Detection of narrowband sources by an array. D.R. Farrier and T.J. Hicks F p133 H p133
Performance assessments of a time-domain adaptive processor in a broadband environment. D. Nunn F p139 H p139
Performance of stochastic gradient descent adaptive beamforming using sonar data. D.R. Sweet F p147 H p147

ACTIVE NETWORKS

Formulas for calculating time constants of RC integrators and differentiators using cascaded resistive L-sections. D. Patranabis and D.K. Ghosh G p207
High-frequency monolithic generalised immittance convertor for RC active filters. J.W. Haslett, M.K.N. Rao and J. Bhagwan G p78
Noise performance of state-space active filters. D.T. Nguyen and L.H. Ting G p217

ACTUATORS

New desaturation strategy for digital PID controllers. H.W. Thomas, D.J. Sandoz and M. Thomson D p188

ADAPTIVE CONTROL

Comment on Monopoli's error augmentation scheme. P.H. Phillipson D p30
Decentralised nonlinear adaptive feedback stabilisation of large-scale interconnected systems. A. Hmamed and L. Radouane D p57
Deterministic convergence of a self-tuning regulator with covariance resetting. G.C. Goodwin, H. Elliott and E.K. Teoh D p6
Offset problem and k-incremental predictors in self-tuning control. D.W. Clarke, A.J.F. Hodgson and P.S. Tuffs D p217

ALGORITHMS

A queueing analysis of a symmetric multiprocessor with shared memories and buses. J. Kriz E p83
Computer-aided design of feedback controllers for nonlinear systems with applications to control of a double-inverted pendulum. M. Sahba D p350
Computing system roots and their sensitivities. N.K. Jain and K. Singhal G p178
Discrete Fourier transform processor based on the prime-factor algorithm. B. Arambepola G p138
Efficient algorithm for image enhancement. B.B. Chaudhuri E p95
Fast suboptimal state-space self-tuner for linear stochastic multivariable systems. L.S. Shieh, C.T. Wang and Y.T. Tsay D p143
General channel-routing algorithm. M. Marek-Sadowska and E.S. Kuh G p83
Integrated two-pass reflectometer: low cost seven-port circuit. B.A. Herscher and J.E. Carroll H p420
Logic design using digital summation threshold-logic gates. A. Pal E p32
New statistical algorithm for fault location in toleranced analogue circuits. J. Huanca and R. Spence G p243
Note on the convergence of linear predictive filters, adapted using the LMS algorithm. C.N. Tate and C.C. Goodyear G p61
Recursive self-tuning algorithm for adaptive Kalman filtering. Y.M. El-Fattah D p341
Self-tuning control algorithm for single-chip microcomputer implementation. A.L. Dexter D p255

AMPLIFIERS

NMOS dynamic differential amplifier. P.U. Calzolari, S. Graffi, G. Masetti and M. Severi G p29

ANALOGUE-DIGITAL CONVERSION

Analogue multiplier/divider with digital output. J.K. Choudhury, S.N. Bhattacharyya and R. Upadhya G p101

ANTENNAS

A complex gradient operator and its application in adaptive array theory. D.H. Brandwood F p11 H p11
Adaptive algorithms in the space and time domains. J.G. McWhirter and T.J. Shepherd F p17 H p17
Adaptive array processing.A tutorial. J.W.R. Griffiths F p3 H p3
Adaptive arrays. (Editorial). G.N. Taylor F p1 H p1
Adaptive antenna design considerations for satellite communication antennas. J.T. Mayhan F p98 H p98
Adaptive clutter supression for airborne phased array radars. R. Klemm F p125 H p125
Analytical and numerical techniques in the Green's function treatment of microstrip antennas and scatterers. J.R. Mosig and F.E. Gardiol H p175
Broadband adaptive array processing. K.M. Ahmed and R.J. Evans F p433
Circularly polarised printed antenna with wide axial-ratio bandwidth using strip dipoles and slots. K. Ito H p397
Coefficient perturbation adaptive HF array. J.E. Hudson, A.S. Ratner and A.C. Cantoni F p91 H p91
Comparison of directional and derivative constraints for beamformers subject to multiple linear constraints. A.K. Steele F p41 H p41
Conically depressed microstrip patch antenna. N. Das and J.S. Chatterjee H p193
Convergence time of sidelobe cancellation systems. D.H. Brandwood F p46 H p46
Detection of narrowband sources by an array. D.R. Farrier and T.J. Hicks F p133 H p133
Direction finding using an adaptive null tracker. P. Barton F p78 H p78
Directive properties of parasitic helix and its application to circularly polarised antenna. H. Nakano, T. Yamane and J. Yamauchi H p391
Dual-frequency circularly polarised printed antenna composed of strips and slots. K. Ito and N. Goto H p170
Duct propagation modelling for the integrated-refractive-effects prediction system (IREPS). G.B. Baumgartner, H.V. Hitney and R.A. Pappert F p630
Eigenfilter approaches to adaptive array processing. T.S. Durrani and K.C. Sharman F p22 H p22
Electronic steering of antenna nulls for interference reduction. J.K. Webb F p417
Experimental linear phased array with partial adaptivity. B. Wardrop F p118 H p118
Experimental open-loop canceller for radar. T.A. Bristow F p109 H p109
External modes of two-dimensional thin scatterers. A. Frenkel H p209
Gain of an array of sensors subjected to processor perturbations. D.R. Farrier H p251
Identification of unwanted scatterers on a free-field EMI test range. J.C. Bennett and B. Chambers F p548
Improved radiation characteristics of conical horns with plastics-foam lenses. A.D. Olver and A.A. Saleeb H p197
Input impedance of a monopole antenna on a finite polygonal ground plane. P.E. Zimourtopoulos, J.N. Sahalos and G.A. Thiele H p276
Mode conversion on profiled corrugated conical horns. S.F. Mahmoud H p415
Modes of resonance of the Jerusalem cross in frequency-selective surfaces. E.A. Parker, S.M.A. Hamdy and R.J. Langley H p203
Multifunction adaptive processor for small antenna arrays. J.G. Searle and C.R. Ward F p57 H p57
Novel method of multiplexing radiocommunication antennas using circular-array configuration. J.R.F. Guy and D.E.N. Davies H p410
Open-loop adaptivity for rotating antennas. D. Stone F p114 H p114
Performance assessments of a time-domain adaptive processor in a broadband environment. D. Nunn F p139 H p139
Performance of stochastic gradient descent adaptive beamforming using sonar data. D.R. Sweet F p147 H p147
Perturbation adaptive array processor for airborne application. J. Kilvington F p84 H p84
Problems associated with correlation-loop adaptive antennas employing hard limiting. C.R. Ward and P.J. Hargrave F p63 H p63
Propagation and scattering in MF/HF groundwave radar. E.D.R. Shearman F p579
Rapid interference suppression using a Kalman filter technique. K. Krücker F p36 H p36
Sidelobe reduction for phased array antennas using digital phase shifters. Part 1: One bit phase weighting. Y.C. Guo and M.S. Smith H p343
Sidelobe reduction for phased array antennas using digital phase shifters. Part 2: Two bit phase weighting. Y.C. Guo and M.S. Smith H p352
TEM horn antenna: input reflection characteristics in transmission. S. Evans and F.N. Kong H p403
Transversal filter techniques for adaptive array applications. K.K. Scott F p29 H p29
UHF circular arrays incorporating open-loop null steering for communications. J.R.F. Guy and D.E.N. Davies F p67 H p67

ARCING

Calculation of arc-circuit asymmetry in electric-arc furnaces. P.F. Ryff B p213
High-voltage test equipment for vacuum interrupters and contacts ('arc and spark' testing). A. Kaltenecker and W. Widl A p387
Transient low-current arc-cathode processes on metals having a very thin oxide film in air at atmospheric pressure. A.E. Guile, K. Dimoff and A.K. Vijh A p379

BIOMEDICAL ENGINEERING

Comparative study of linear prediction parameters for quantification and monitoring of dysphonic voices. C. Hernández, S. Feijoó, J.E. Arias and M.A. Bernal A p336
Industrial, scientific, medical and domestic applications of microwaves. M.A. Stuchly and S.S. Stuchly A p467
Nonlinear circuit mode analysis. D.A. Linkens A p69

BIPOLAR TRANSISTORS

Transit and storage times of bipolar transistors in a VLSI environment. S.S. Rofail I p151

BOOLEAN ALGEBRA

Multivariable symmetries and their detection. J.C. Muzio, D.M. Miller and S.L. Hurst **E** p141

BREAKDOWN AND GAS DISCHARGES

Behavioûr of pressboard-oil insulation under alternating voltages of industrial frequency in a nonuniform electric field. P.N. Nikolopoulos and D.N. Diamantopoulos **A** p145
Charge model for studying corona during surges on overhead transmission lines. M. Afghahi and R.J. Harrington **C** p16
Experimental and numerical investigation of field conditions associated with the transport of low-conductivity liquids and powders. J.R. Smith, P. Lees, D. McAllister and J. Hughes **A** p369
Lightning and switching impulse breakdown of rod/plane gaps in nitrogen/freon (CCl_2F_2) mixtures. T.V. Babu Rajendran, C.S. Lakshiminarasimha and M.S. Naidu **A** p134
Microdischarge characteristics in air gap between spherical particle and plane. Masanori Hara, Takahiko Yamashita and Masanori Akazaki **A** p329
Space-charge-limited bipolar current flow between coaxial cylindrical electrodes. C.B. Wheeler **A** p43
Toroid immersed in a homogeneous electric field. T. Slivnik **A** p261
Transient low-current arc-cathode processes on metals having a very thin oxide film in air at atmospheric pressure. A.E. Guile, K. Dimoff and A.K. Vijh **A** p379

CABLES AND OVERHEAD LINES

Fault location for transmission lines with current-transformer saturation. G.G. Richards and O.T Tan **C** p22
Foundation uplift resistance: the effects of foundation type and of seasonal changes in ground conditions. M.J. Vanner **C** d232
Improved input signals to the polarised-mho distance relay. V. Cook **C** p206
Prediction of long-line radio-interference field from measurements on multiconductor short-line. S. Cristina and M. D'Amore **C** p83
Simplified analysis of transient due to fault initiation on double-ended overhead and underground transmission lines. K. Matsuura and H. Kinoshita **C** p75

CALIBRATION

Simplified calibration technique for general six-port reflectometer requiring only two coaxial airline standards. D. Woods **A** p250
Two-stage current transformers in differential calibration circuits. P.J. Betts **A** p324

CIRCUIT THEORY AND DESIGN

Bit-level systolic array circuit for matrix vector multiplication. J.V. McCanny and J.G. McWhirter **G** p125
Circuit realisation of products of grounded multiport matrices, using multiport immitance convertors. G.A. Nenov **G** p10
Coherent design of asynchronous circuits. P. Vingron **E** p190
Comparison of MOS processes for VLSI. H.E. Oldham and S.L. Partridge **I** p94
Dependent and independent sensitivities in signal-flow graphs. C. Acar **G** p97
Deriving delayed sequences from pseudo-random-noise generators using exclusive NOR feedback. J.R. Jordan and B. Kiani-Shabestari **G** p89
Energy storage and flow control by means of a 2-port, time-variable coupling network. S. Singer **G** p7
High-frequency monolithic generalised immittance convertor for RC active filters. J.W. Haslett, M.K.N. Rao and J. Bhagwan **G** p78
High-performance integrators and applications in 2-integrator loop biquads. P.S.R. Diniz and L.P. Calouba **G** p94
Influence of series reactance on quartz-crystal resonators. R.J. Holbeche and G. Allen **G** p145
Mathematical model and electric-circuit simulation of DC machines. R.S. Ramshaw and G. Xie **B** p218
Multivariable symmetries and their detection. J.C. Muzio, D.M. Miller and S.L. Hurst **E** p141
New statistical algorithm for fault location in toleranced analogue circuits. J. Huanca and R. Spence **G** p243
Nonlinear circuit mode analysis. D.A. Linkens **A** p69
Novel earthed capacitor dual-input tunable ideal integrator with enlarged time constant. S. Nandi, P.B. Jana and R. Nandi **G** p159
Practical universal active filter using generalised-immittance-convertor biquads. S.-S. Chuang **G** p153
Two new single op-amp RC bridge-T oscillator circuits. N. Boutin **G** p222

CLOSED-LOOP SYSTEMS

Multivariable pole assignment self-tuning regulator. P.E. Wellstead **D** d200
Singular-perturbation method for discrete models of continuous systems in optimal control. P.K. Rajagopalan and D.S. Naidu **D** d136

COAXIAL CABLES

Field distortion parameters for a nonaxisymmetric cylindrical transmission line. C.B. Edwards **A** p322
General crosstalk equations between two braided coaxial cables in free space. S. Sali, F.A. Benson and J.E. Sitch **A** p306

CODES AND DECODING

A new class of passive subharmonic transponders. E. Eshraghian and P.H. Cole **G** p45
An optical fibre section in the Cambridge digital ring. D.J. Hunkin and G.W. Litchfield **E** p154
Class of linear cyclic block codes for burst errors occurring in one-, two- and three-dimensional channels. E. Olcayto and T. Lesz **F** p468
Digital filter structures for canonic signed-digit code implementation by microprocessor. P.M. Hughes and B.M.G. Cheetham **E** p37
Hybrid frequency-domain coding of speech signals. S.W. Foo and L.F. Turner **F** p459
Net coding gain of some rate 1/2 block codes. V.K. Bhargava and M. Avni **F** p325
Overview of analogue signal encryption. S.C. Kak **F** p399

COMMUTATION

Analysis of commutation of a current-source inverter feeding an induction motor,using 2-axis variables. V. Subrahmanyam **B** p355
Generalised analysis for steady-state characteristics of DC commutatorless motors. Y. Takeda, S. Morimoto and T. Hirasa **B** p373

COMPUTER APPLICATIONS

CONIC: an integrated approach to distributed computer control systems. J. Kramer, J. Magee, M. Sloman and A. Lister **E** p1
Computerised in-situ testing of feeder protections. A.C. Webb **C** p51
Deriving delayed sequences from pseudo-random-noise generators using exclusive NOR feedback. J.R. Jordan and B. Kiani-Shabestari **G** p89
Interactive security evaluation in power-system operation. A.O. Ekwue and M.J. Short **C** p61
Manufacturing systems and the engineer. S. Daughters **A** p63
New technique for optimal reactive-power allocation for loss minimisation in power systems. S. Ramalyer, K. Ramachandran and S. Hariharan **C** p178
Recognition of printed Thai characters using a matching method. C. Kimpan and A. Itoh **E** p183
Simplified computation of coplanar waveguide with finite conductor thickness. K. Koshiji, E. Shu and S. Miki **H** p315
The information society—the wonder that would be?. B.W. Manley **A** p15

COMPUTER SIMULATION

Automatic generation control of interconnected power systems using variable-structure controllers. W-C. Chan and Y-Y. Hsu **C** d231
Computer generation of a slowly varying pseudorandom process. K. Wesolowski **F** p314
Field optimisation of high-voltage electrodes. H. Grönewald **C** p201
General computational method for performing availability analysis of power-system configurations. D.P. Papadopoulos **C** p285
Improved input signals to the polarised-mho distance relay. V. Cook **C** p206

COMPUTER-AIDED DESIGN

Computer-aided design of structurally constrained multivariable regulators, Pt. 1: Problem statement,analysis and solution. G. Guardabassi, A. Locatelli, C. Maffezzoni and N. Schiavoni **D** p155
Computer-aided design of structurally constrained multivariable regulators, Pt. 2: Applications. G. Guardabassi, A. Locattelli, C. Maffezzoni and N. Schiavoni **D** p165
Depletion mode MOSFET modelling for CAD. Sufia Haque-Ahmed and C. André T. Salama **I** p281
Design of model reference systems using frequency-domain methods. P.T. Kidd and N. Munro **D** p273
Digital computer simulation of variable-speed PWM inverter-machine drives. S.R. Bowes and R.R. Clements **B** p149
Efficient computer method for ExOR logic design. Ph.W. Besslich **E** p203
Interactive security evaluation in power-system operation. A.O. Ekwue and M.J. Short **C** p61
Manufacturing systems and the engineer. S. Daughters **A** p63
Steady-state performance of PWM inverter drives. S.R. Bowes and J. Clare **B** p229
The present state of the art on computer-aided draughting and design. D.F. Sheldon **A** p173

CONDUCTORS AND CONDUCTIVITY

Joule adiabatic heating of high-resistance alloys. M. Slonim **A** p239
Measurement of eddy-current conductivity. A.C. Lynch, A.E. Drake and C.H. Dix **A** p254

CONTROL EQUIPMENT AND APPLICATIONS

A simple digital control scheme for a DC motor. B.A. White, R.T. Lipczynski and A.R. Daniels **B** p143
Chassis dynamics related to a low-cost magnetically suspended vehicle. V.M. Gondhalekar and B.V. Jayawant **D** p83
Determination of optimum operating frequency of a current-source inverter-controlled asynchronous machine by measurement of stator voltages. B. de Fornel, J.C. Hapiot, C. Saubion and B. Trannoy **B** p207
Extended-range angular rotary pick-off. Tapan Chunder **D** p41
Globally stable nonlinear flight control system. D. McLean **D** p93
Microprocessor control of triac cycloconvertor. S.K. Tso and C.C. Leung **B** p193
New desaturation strategy for digital PID controllers. H.W. Thomas, D.J. Sandoz and M. Thomson **D** p188
Nonlinear control of a paper-stock flowbox. D.J. Gunn and A.K. Sinha **D** p131

CONTROL SYSTEMS

Automatic generation control of an interconnected hydrothermal system in continuous and discrete modes considering generation rate constraints. J. Nanda, M.L. Kothari and P.S. Satsangi **D** p17
Autopilot for ship control, Pt. 2: Simulation studies. C.C. Lim and W. Forsythe **D** p288
Effect of wide-beam sensors on control of dual-delay systems. J.B. Edwards and J.K. Twemlow **D** p226
Energy storage and flow control by means of a 2-port, time-variable coupling network. S. Singer **G** p7
Heat-pump control. Y.T. Wang, D.R. Wilson and D.F. Neale **D** p328
Identification of stochastic time-varying systems. K.A.F. Moustafa **D** p137
Multivariable pole assignment self-tuning regulator. P.E. Wellstead **D** d200
New approach to failure detection in large-scale systems. M.G. Singh, M.F. Hassen, Y.L. Chen and Q.R. Pan **D** p243
New desaturation strategy for digital PID controllers. H.W. Thomas, D.J. Sandoz and M. Thomson **D** p188
Nonlinear control of a paper-stock flowbox. D.J. Gunn and A.K. Sinha **D** p131
Offset problem and k-incremental predictors in self-tuning control. D.W. Clarke, A.J.F. Hodgson and P.S. Tuffs **D** p217
Reduced-order switching functions in variable-structure control systems. B.A. White **D** p33
Robust control of a class of nonlinear servomechanism problem. R. Doraiswami **D** p63

Self-tuning control algorithm for single-chip microcomputer implementation. A.L. Dexter D p255
Self-tuning PI control of a pH neutralisation process. C.G. Proudfoot, P.J. Gawthrop and O.L.R. Jacobs D p267
Sensitivity reduced design of discrete linear regulator with prescribed degree of stability. M. Gopal and J.G. Ghodekar D p261
Servo-system design technique utilising sensitivity as a design parameter. Y. Kamiya D p209
Stability of accelerating repetitive systems. J.B. Edwards D p183
Steady-state stability of an HVDC system using frequency-response methods. R. Yacamini and A.M.I. Taalab C p194
Structurally fixed modes in decentralised systems. Pt. 2: General case. S. Momen and E.J. Evans D p322
The development of tracking systems. H.A. Prime A p8
Ward-Leonard characteristics from nonlinearly-controlled series-motor drives. J.B. Edwards, K. Pacey and T.A. Al-Fileyeh B p302

CONTROL THEORY

Autopilot for ship control, Pt. 1: Theoretical design. C.C Lim and W. Forsythe D p281
Comment on Monopoli's error augmentation scheme. P.H. Phillipson D p30
Dynamic output feedback controller. G.S. Mueller and V.O. Adeniyi D p28
Identification of stochastic time-varying systems. K.A.F. Moustafa D p137
Improved algorithms for parameter identification in continuous systems via Walsh functions. G. Prasada Rao and K.R. Palanisamy D p9
Improvement of system performance by the use of time-delay elements. J.E. Marshall and S.V. Salehi D d92
Methods and concepts of dominance optimisation. G.F. Bryant and L.F. Yeung D p72
New desaturation strategy for digital PID controllers. H.W. Thomas, D.J. Sandoz and M. Thomson D p188
Offset problem and k-incremental predictors in self-tuning control. D.W. Clarke, A.J.F. Hodgson and P.S. Tuffs D p217
Optimal control of a voltage-driven stepping motor. D.I. Jones and J.W. Finch D p175
Self-tuning PI control of a pH neutralisation process. C.G. Proudfoot, P.J. Gawthrop and O.L.R. Jacobs D p267
Stability of accelerating repetitive systems. J.B. Edwards D p183
Structure detection and model validity tests in the identification of nonlinear systems. S.A. Billings and W.S.F. Voon D p193

CONVERTORS

A cycloconvertor-linked induction heating system. V.S. Gharpure and G.N. Revankar B p321
AC characteristics in AC/DC/DC conversion. P. Marino, C. Picardi and A. Russo B p201
Active filters for static power convertors. J. Uceda, F. Aldana and P. Martinez B p347
Microprocessor control of triac cycloconvertor. S.K. Tso and C.C. Leung B p193
New cycloconvertor for power-system high-frequency links. M.K. Forster and J.T. Boys C p111
Prediction and control of harmonic phase sequence in power convertors. C. Hargis and B.M. Bird B p58
Slip-power recovery scheme employing a fully controlled convertor with half-controlled characteristics. N.N. Rao, G.K. Dubey and S.S. Prabhu B p33
Steady-state stability of an HVDC system using frequency-response methods. R. Yacamini and A.M.I. Taalab C p194
Terminal behaviour of the uncontrolled R-L fed 3-phase bridge rectifier. D.J. Tylavsky and F.C. Trutt B e142
Third-harmonic current from unbalanced AC/DC convertors. R. Yacamini and W.J. Smith C p122

CYBERNETICS AND ROBOTICS

A microprocessor-controlled real-time image processor. D. Lavie and W.K. Taylor E p149

DETECTION

Detection process of a 9600 bit/s serial modem for HF radio links. A.P. Clark and H.Y. Najdi F p368
Multistatic radar detection: synthesis and comparison of optimum and sub-optimum receivers. Ernesto Conte, Egido D'Addio, Alfonso Farina and Maurizio Longo F p484
Optimisation of a generalised square-law detector. F.R. Castella F p405
Performance of a two-stage nonparametric conditional detector for Rician density. S. Tantaratana F p331
Polarisation-vector translation in radar systems. A.J. Poelman F p161
Radar performance studies of adaptive lattice clutter-supression filters. C. Gibson and S. Haykin F p357
The development of tracking systems. H.A. Prime A p8

DIELECTRICS

Analytical and numerical techniques in the Green's function treatment of microstrip antennas and scatterers. J.R. Mosig and F.E. Gardiol H p175
Double Schottky-barrier diode power sensor. T.Y. An and A.L. Cullen H p160
Error analysis of the measurement of microstrip effective dielectric constant for the characterisation of passive two-ports. M. Gunes and D.P. Howson H p369
Measurement of piezoelectric coefficients and permittivity with small specimens. A.W. Palmer, A.C. Lynch and A.T. Parish A p129
Measurements of permittivity using an open resonator. A.C. Lynch A p365
Temperature distribution in uniform and layered microwave absorbers in waveguide. I.A. Ali and L.J. Auchterlonie H p236

DIGITAL CIRCUITS

An approach to sequential circuit construction in LSI programmable arrays. Christos.A. Papachristou and Debabrata Sarma E p159
Elimination of constant-input limit cycles in recursive digital filters using a generalised minimum norm. L.E. Turner G p69
Parallel pipeline fast Fourier transformer. J.A. Johnston F p564
Practical-BIBO stability of n-dimensional discrete systems. P. Agathoklis and L.T. Bruton G p236

DIGITAL COMMUNICATION SYSTEMS

19 GHz digital radio-relay and the weather. R.S. Swain F p506
A new binary logarithm-based computing system. G.P. Frangakis E p169
An easy way to calculate power spectra for digital FM. Tor Aulin and Carl-Erik Sundberg F p519
Analysis of HF interference with application to digital communications. G.F. Gott, S. Dutta and P. Doany F p452
Application of catastrophe theory to a slotted ALOHA communication system. N.D. Birrell F p337

DIGITAL COMPUTERS AND COMPUTATION

A new binary logarithm-based computing system. G.P. Frangakis E p169
A queueing analysis of a symmetric multiprocessor with shared memories and buses. J. Kriz E p83
Ada model arithmetic: costs and benefits. P.J.L. Wallis E e139
Availability modelling of multiprocessors. J.C.B. Leite and P.G. Depledge E p165
Bit-level systolic array circuit for matrix vector multiplication. J.V. McCanny and J.G. McWhirter G p125
Clocks and the performance of synchronisers. W.Y-P. Lim and J.R. Cox E p57
Computing system roots and their sensitivities. N.K. Jain and K. Singhal G p178
Development environment for the design and test of applications software for a distributed multiprocessor computer system. F. Halsall, R.L. Grimsdale, G.C. Shoja and J.E. Lambert E p25
Multivariable pole assignment self-tuning regulator. P.E. Wellstead D d200
Operational fault-tolerance microcomputer for very high reliability. M. Yaacob, M.G. Hartley and P.G. Depledge E p90
Pseudo-associative store with hardware hashing. J.G.D. daSilva and I. Watson E p19
Teaching digital-systems design with a microprocessor-controlled patchboard. A.J.D. Casaca and J.V. Woods E p75
Transfer-function models of sampled systems. J.A. Gibson and M.A. Hamilton-Jenkins G p37

DIGITAL CONTROL

Design algorithms for digital control systems with deadbeat unit step response. Fu-Yih Shih D p119

DIGITAL INSTRUMENTATION

Adaptive filtering with finite wordlength constraints. J.O. Normile and F.M. Boland E p42
Computationally efficient narrowband linear-phase FIR filters. T. Saramaki G p20
Digital filter structures for canonic signed-digit code implementation by microprocessor. P.M. Hughes and B.M.G. Cheetham E p37
Self-error feedback in recursive digital filters. W. Surakampontorn and M.I. Sobhy G p205
Subjective quality of a 70 Mbits digital codec for colour television. M.W. Redstall and T.A. White F p477

DIODES

Control of Schottky-diode-barrier height by Langmuir-Blodgett monolayers. C.S. Winter and R.H. Tredgold I p256
Mott-barrier mixer diodes with improved semiconductor profiles for cooled operation at submillimetre wavelengths. N.J. Keen I p171
Numerical solutions for surface electric field distributions in avalanching *p-i-n* power diodes. V.K. Pathak and J. Gowar I p17
$Pb_{1-x}Sn_xSe/PbSe$ heterostructure lasers. F.J. Bryant, A. Qadeer and J. Reed I p287
Theory of the triangular-barrier switch. S.E-D. Habib and K. Board I p292

DISCHARGES, ELECTRIC

Experimental and numerical investigation of field conditions associated with the transport of low-conductivity liquids and powders. J.R. Smith, P. Lees, D. McAllister and J. Hughes A p369
High-voltage test equipment for vacuum interrupters and contacts ('arc and spark' testing). A. Kaltenecker and W. Widl A p387

DISTRIBUTION NETWORKS

Parallelogram theory for the solution of distributed network voltage problems by computer. E.J. Holmes and A.M. Moffatt C p153

DOPING

Low-voltage direct-current electroluminescence in ZnS:RE thin films. F.J. Bryant and A. Krier I p160
Optimum designs for InGaAsP/InP ($\lambda = 1.3\mu m$) planoconvex waveguide lasers under lasing conditions. M. Ueno, R. Lang, S. Matsumoto, H. Kawano, T. Furuse and I. Sakuma I e79
Physical explanation of GaAs MESFET I/V characteristics. M.A.R. Al-Mudares and K.W.H. Foulds I p175
Simulation and measurement of C/V doping profiles in multilayer structures. J.E.A. Whiteaway I p165

EARTHING

Microprocessor-based algorithm for high-resistance earth-fault distance protection. Q.S. Yang and I.F. Morrison C p306

EDDY CURRENTS

3-dimensional eddy-current calculation by the network method—formulation using magnetic scalar potential for nonconducting regions. M.J. Balchin and J.A.M. Davidson A p88

Analytic separation of the factors contributing to the eddy-current loss in magnetically nonlinear steel. A.L. Bowden and E.J. Davies B p364
Currents flowing in the stator-core frames of large electrical machines. P.J. Tavner and J. Penman C p273
Eddy currents in circular,square and rectangular rods. B. Beiland A p112
Finite-element method for calculating power frequency 3-dimensional electromagnetic field distributions. D. Rodger A p233
Measurement of eddy-current conductivity. A.C. Lynch, A.E. Drake and C.H. Dix A p254
Production of short mechanical impulses by means of eddy currents. R.M. Bowley, P.J. King, G.J. Lewis and I. Shellard B p429

EDUCATION AND TRAINING

Education for technology. C.W. Davidson A p36
The education of engineers in Belgium. W. Geysen A p49
Undergraduate projects and their assessment. J. Allison and F.A. Benson A p402

ELECTROMAGNETICS

3-dimensional eddy-current calculation by the network method—formulation using magnetic scalar potential for nonconducting regions. M.J. Balchin and J.A.M. Davidson A p88
Analytic separation of the factors contributing to the eddy-current loss in magnetically nonlinear steel. A.L. Bowden and E.J. Davies B p364
Continuous power loss measurement with and against the rolling direction of electrical steel strip using nonenwrapping magnetisers. P. Beckley A p313
Coupling between two conical horns placed side by side. M.S. Narasimhan and K.H. Prasad H p358
Dual finite-element calculations for static electric and magnetic fields. P. Hammond and T.D. Tsiboukis A p105
Eddy currents in circular,square and rectangular rods. B. Beiland A p112
Energy flow in a 2-pole hysteresis coupling by Poynting theorem. S.C. Bhargava A p301
Field distortion parameters for a nonaxisymmetric cylindrical transmission line. C.B. Edwards A p322
Field distribution in a cylindrical shell of finite length and thickness due to an external current filament. E.E. Kriezis and D.P. Chrissoulidis A p46
Finite-element method for calculating power frequency 3-dimensional electromagnetic field distributions. D. Rodger A p233
Finite-element solution of three-dimensional electromagnetic problems. J.P. Webb, G.L. Maile and R.L. Ferrari H p153
General crosstalk equations between two braided coaxial cables in free space. S. Sali, F.A. Benson and J.E. Sitch A p306
Influence of electric fields on flying insects. D.B. Watson, L.M. Faithfull and N.J. Williams A p390
Joule adiabatic heating of high-resistance alloys. M. Slonim A p239
Modes of resonance of the Jerusalem cross in frequency-selective surfaces. E.A. Parker, S.M.A. Hamdy and R.J. Langley H p203
Proximity effect between a wire carrying current and a rotating cylindrical conductor. I.R. Ciric A p122
Simulation of rectangular arrays of large charged cylinders of alternating sign by sets of line chargers. Y. Zimmels A p242
Toroid immersed in a homogeneous electric field. T. Slivnik A p261

ELECTRON DEVICES

Physical explanation of GaAs MESFET I/V characteristics. M.A.R. Al-Mudares and K.W.H. Foulds I p175
Physical frequency limitations of 2-terminal devices. G. Salmer I p80
Representation of coupled-cavity slow-wave structures by equivalent circuits. R.G. Carter I p67

ELECTRONIC CIRCUITS

A new class of passive subharmonic transponders. E. Eshraghian and P.H. Cole G p45

ENERGY CONVERSION AND STORAGE

Conservation through design. M.R. Lloyd A p360
Development of the 7.3 MW MOD-5A wind-turbine generator system. R.S. Barton and W.C. Lucas A p537
Dynamics of an isolated power system supplied from diesel and wind. A.J. Tsitsovits and L.L. Freris A p587
Energy content and availability of metals. P.F. Chapman A p354
Industrial energy usage. R.C. Bending A p353
Long-term management of energy. M.W. Thring A p281
Monitoring and control using energy management systems. M.D. Clapp A p357
Novel accelerator energy convertor. A.H. Falkner I p192
Ocean thermal-energy conversion. G. Ford, C. Niblett and L. Walker A p93
Operation and control of a 2GW wave-energy scheme. H.W. Whittington and J.R. Jordan A p340
Plant life monitoring and extension. R.H. Carpenter A p362
Practical energy management. C.D.E. Jones A p356
Review of wind/diesel strategies. D.G. Infield, G.W. Slack, N.H. Lipman and P.J. Musgrove A p613
Status of Boeing wind-turbine systems. J.E. Lowe and W. Wiesner A p531
The HWP-300 wind turbine. P. Jamieson and D. McLeish A p550
UK. energy policy-issues and priorities. J.H. Chesshire A p350
Vertical-axis wind turbine development in Canada. R.J. Templin and R.S. Rangi A p555
Wake and performance measurements on the Lawson-Tancred 17 m horizontal-axis windmill. G.J. Taylor A p604
Wind energy conversion—an introduction. P.J. Musgrove A p506

ENGINEERING ADMINISTRATION AND MANAGEMENT

An example of product innovation in a simple power outlet. J.B. Izatt A p223
Applications of network theory to social systems. P. Holroyd A p273
Conservation through design. M.R. Lloyd A p360
Contrasts in management styles—Europe and the USA. W.W. George A p288
Design for quality. Rear Admiral D.G. Spickernell A p159
Design of electronic equipment for broadcasting. F.G. Parker A p190
Education for technology. C.W. Davidson A p36
Energy content and availability of metals. P.F. Chapman A p354
Engineering management for women. R. West A p101
Harnessing Murphy's Law. R.F. Pursell A p364
Industrial energy usage. R.C. Bending A p353
Man-machine interface design. C.H. Flurscheim A p167
Management for quality. C.A. Mills A p58
Management of the design of large turbine generators. R. Hawley and B.A. Marlow A p207
Manufacturing systems and the engineer. S. Daughters A p63
Monitoring and control using energy management systems. M.D. Clapp A p357
Plant life monitoring and extension. R.H. Carpenter A p362
Practical energy management. C.D.E. Jones A p356
Productive labour. H. Tomlinson A p19
Review of design methodology. L. Finkelstein and A.C.W. Finkelstein A p213
Science and style.The integrating function of design. Frank Height A p180
Setting up small high-technology companies. J.D. Rhodes A p398
The engineer in the middle ground of manufacture. J. Banks A p1
The importance of design. William Barlow A p224
The many facets of engineering design. K.K. Schwarz A p196
The present state of the art on computer-aided draughting and design. D.F. Sheldon A p173
The role of the consulting engineer in the design of high-voltage power transmission projects overseas. A.B. Wood and M.W. Kennedy A p202
The role of the engineer in a free economy. J.F. Coales A p393
UK. energy policy-issues and priorities. J.H. Chesshire A p350

EPITAXY

Direct-gap group IV semiconductors based on tin. C.H.L. Goodman I e46
Optimum designs for InGaAsP/InP ($\lambda = 1.3\mu m$) planoconvex waveguide lasers under lasing conditions. M. Ueno, R. Lang, S. Matsumoto, H. Kawano, T. Furuse and I. Sakuma I e79

ERRORS AND ERROR ANALYSIS

Class of linear cyclic block codes for burst errors occurring in one-, two- and three-dimensional channels. E. Oicayto and T. Lesz F p468
Error analysis of the measurement of microstrip effective dielectric constant for the characterisation of passive two-ports. M. Gunes and D.P. Howson H p369
Net coding gain of some rate 1/2 block codes. V.K. Bhargava and M. Avni F p325
Probability of error in combinational logic systems containing soft fails. G.R. Redinbo and G.X. Wang E p125

FAULT LOCATION

Accurate fault impedance locating algorithm. A. Wiszniewski C p311
Discriminative response of distance protection in reverse-fault operation. W.D. Humpage and K.P. Wong C p217
Fault location for transmission lines with current-transformer saturation. G.G. Richards and O.T. Tan C p22
New statistical algorithm for fault location in toleranced analogue circuits. J. Huanca and R. Spence G p243
Simplified analysis of transient due to fault initiation on double-ended overhead and underground transmission lines. K. Matsuura and H. Kinoshita C p75
Transient stability analysis of electric power systems by the method of tangent hypersurfaces. P.A. Cook and A.M. Eskicioglu C p183

FEEDBACK

Dependent and independent sensitivities in signal-flow graphs. C. Acar G p97
Dynamic output feedback controller. G.S. Mueller and V.O. Adeniyi D p28
Self-error feedback in recursive digital filters. W. Surakampontorn and M.I. Sobhy G p205
Sequences of linear-feedback shift registers with nonlinear-feed forward logic. N. Kalouptsidis and M. Manolarakis E p174

FERRITES AND FERROMAGNETICS

General properties of tensor Green's function for planar ferrite structures. R. Hoffmann H p373

FERROMAGNETICS

Eddy currents in circular,square and rectangular rods. B. Beiland A p112

FIELD-EFFECT TRANSISTORS

Chemical-sensitive field-effect transistors. A. Sibbald I p233
Comparison between two-dimensional short-channel MOSFET models. U. Kumar I p37
Depletion mode MOSFET modelling for CAD. Sufia Haque-Ahmed and C. André T. Salama I p281
Empirical model for gallium arsenide MESFETs. D.J. Brown I p29
Modelling DC characteristics of dual-gate GaAs MESFETs. R.A. Minasian I p182
Modelling of small MOS devices and device limits. P.K. Chatterjee, Ping Yang and Hisashi Shichijo I p105
Negative differential resistivity in field-effect transistors. C. Moglestue I p275
New hot-carrier injection and device degradation in submicron MOSFETs. E. Takeda, Y. Nakagome, H. Kume and S. Asai I p144
Physical explanation of GaAs MESFET I/V characteristics. M.A.R. Al-Mudares and K.W.H. Foulds I p175
Power MOSFET dynamic large-signal model. R.A. Minasian I p73
Selenium implantation into GaAs for integrated circuits. P.A. Leigh I p265

FILTERS AND FILTERING

Accelerated design of linear or minimum phase FIR filters with a Chebyshev magnitude response. S. Ebert and U. Heute G p267
Adaptive cascade filter for speech analysis. P.C. Ching and C.C. Goodyear E p11

Adaptive filtering with finite wordlength constraints. J.O. Normile and F.M. Boland **E** p42
Computationally efficient narrowband linear-phase FIR filters. T. Saramaki **G** p20
Design of LC input filter for multiphase DC choppers. M.H. Rashid **B** p39
Duality of the discrete-time optimal filter and regulator problems. A. Johnson **D** p173
Effects of finite word length on FIR filters for MTD processing. E. D'Addio and G. Galati **F** p573
Elimination of constant-input limit cycles in recursive digital filters using a generalised minimum norm. L.E. Turner **G** p69
High-frequency monolithic generalised immittance convertor for RC active filters. J.W. Haslett, M.K.N. Rao and J. Bhagwan **G** p78
Highpass and bandpass 2nd-order switched-capacitor filters. P.V.A. Mohan, V. Ramachandran and M.N.S. Swamy **G** p1
Low-noise microwave-frequency synthesisers: design principles. V.F. Kroupa **H** p483
New solution for the ideal filter approximation problem. V.B. Litovski and D.P. Milovanovicu **G** p161
Note on the convergence of linear predictive filters, adapted using the LMS algorithm. C.N. Tate and C.C. Goodyear **G** p61
Practical universal active filter using generalised-immittance-convertor biquads. S.-S. Chuang **G** p153
Practical-BIBO stability of n-dimensional discrete systems. P. Agathoklis and L.T. Bruton **G** p236
Radar performance studies of adaptive lattice clutter-supression filters. C. Gibson and S. Haykin **F** p357
Rapid interference suppression using a Kalman filter technique. K. Krücker **F** p36 **H** p36
Sacrifices in radar clutter suppression due to compromises in implementation of digital Doppler filters. J.W. Taylor **F** d574
Self-error feedback in recursive digital filters. W. Surakampontorn and M.I. Sobhy **G** p205
Some comparisons of approximation techniques in the design of delay-equalised selective filters. B.D. Rakovich and M.Dj. Radmanovič **G** p53
The analytical transfer functions of wave-digital filters derived from LC ladder prototypes. E.C. Tan **G** p185
The general purpose design of 2-dimensional recursive digital filters. G. Crebbin and J. Attikiouzel **G** p171
Transfer-function models of sampled systems. J.A. Gibson and M.A. Hamilton-Jenkins **G** p37
Two-dimensional discrete filters using spatial integrators. L.T. Bruton and T.E. Strecker **G** p271
Upper-bounded pole-Q approximation for active filters. A. Premoli **G** p65

GENERATORS

Coherency-based identification of optimum site for stabiliser applications. T. Hiyama **C** p71
Performance and application of multistacked imbricated permanent magnet generators. K.J. Binns and T.S. Low **B** p421
Slotless-disc alternator with AC-side excitation. P.D. Evans and J.F. Eastham **B** p413
Transient stability analysis of electric power systems by the method of tangent hypersurfaces. P.A. Cook and A.M. Eskicioglu **C** p183
Use of frequency-scan techniques for subsynchronous-resonance analysis of a practical series-capacitor compensated AC network. M. El-Marsafawy **C** p28

GUNN DEVICES

Noise performance of cavity stabilised oscillators. R. Knöchel and K. Schünemann **H** p281
Ultra-wideband millimetre-wave self-oscillating mixer. M.J. Lazarus and F.R. Pantoja **H** p340

HAZARDS

A look at design and safety in the past. H. Abbott **A** p297
Consumer appliance design for inherent safety. S.H. Green **A** p235
Contribution of labelling, instructions and warnings to safety in design. F.W. Stacey **A** p296
Design for safety today—the Metro. D.R. Gebbels **A** p298
Design for safety. G.E.P. Constable **A** p292
Design for safety. J. Butcher **A** p292
Harnessing Murphy's Law. R.F. Purssell **A** p364
Hazard analysis and risk assessment: aids to the evaluation of product safety. D. Boswell **A** p293
Risks associated with wind-turbine blade failures. J.F. Macqueen, J.F. Ainslie, D.J. Milborrow, D.M. Turner and D.T. Swift-Hook **A** p574
Safety specification as part of the design brief. F.W. Pearson **A** p292
The contribution of the British Standards Institution. D.G. Spickernell **A** p299
Use of sophisticated systems to improve safety in design. L. Burgess **A** p296

HYSTERESIS

Energy flow in a 2-pole hysteresis coupling by Poynting theorem. S.C. Bhargava **A** p301

IMAGE PROCESSING

A microprocessor-controlled real-time image processor. D. Lavie and W.K. Taylor **E** p149
Efficient algorithm for image enhancement. B.B. Chaudhuri **E** p95
Nonlinear image processing for optimum composite source coding. D.K. Mitrakos and A.G. Constantinides **F** p441
Spectral response of the discrete cosine and Walsh-Hadamard transforms. R.J. Clarke **F** p309

INDUCTION MOTORS

A new pole-changing winding using star/star-delta switching. P. Chidambaram, A.A. Kamath, M. Subbiah and M.R. Krishnamurthy **B** p130
Cage-rotor induction motor with unity power factor. E.R. Laithwaite and S.B. Kuznetsov **B** d60
Comparison of 3-dimensional and 1-dimensional calculations of the thrust of a sector motor. A. Hameed, R. Belmans, W. Geysen, H. Jordan and A. Vandenput **B** d228
Design of phase-change 2-speed windings for induction motors,using pole-amplitude modulation techniques. D. Grant **B** p45
Dynamic braking performance of double-sided linear induction motors by circle diagram. A. Shanmugasundaram and C. Muthu **B** p449
Effect of stator slotting on the performance of sheet-rotor induction motors. D.E. Hesmondhalgh and D. Tipping **B** p395
Effects of machine parameter values on dynamic response and stability regions of doubly-fed cascade induction machines. C.D. Cook and B.H. Smith **B** p137
Equivalent rotor impedance of sheet-rotor induction motors. D.E. Hesmondhalgh and D. Tipping **B** p331
Finite-element analysis of an induction motor fed from a constant-voltage source. S. Williamson and J.W. Ralph **B** p18
Linear induction motor—equivalent-circuit model. J. Duncan **B** p51
Loss-optimal PWM waveforms for variable-speed induction-motor drives. F. De Buck, P. Gistelinck and D. De Backer **B** p310
Magnetising-field saturation and dynamic behaviour of induction machines. Part 2: Stability limits of a voltage-fed induction motor and of a self-excited induction generator. J.A.A. Melkebeek **B** p10
Magnetising-field saturation and dynamic behaviour of induction machines.Part 1: Improved calculation method for induction-machine dynamics. J.A.A. Melkebeek **B** p1
Miniature sheet-rotor induction motors for extremely high speeds. D.E. Hesmondhalgh and D. Tipping **B** p265
Optimum design of shaded-pole motors by means of 2-phase symmetrical components. T. Yokozuka **B** p341
Power-factor improvement in cage-rotor induction motors. S. Williamson **B** p121
Power-factor improvement in linear induction motors. E.R. Laithwaite and S.B. Kuznetsov **B** d60
Steady-state analysis of 3-phase cage motors with rotor bar and end-ring faults. S. Williamson and A.C. Smith **B** d225
The process of self excitation in induction generators. J.M. Elder, J.T. Boys and J.L. Woodward **B** p103
Twin-armature rotary-linear induction motor. J. Fleszar and E.A. Mendrela **B** p186
Zero-sequence dynamic braking and parameter determination. C. Grantham **B** p406

INDUSTRIAL APPLICATIONS OF POWER

A cycloconvertor-linked induction heating system. V.S. Gharpure and G.N. Revankar **B** p321
Calculation of arc-circuit asymmetry in electric-arc furnaces. P.F. Ryff **B** p213
Impedance and phase balancing of mains-frequency induction furnaces. J.F. Tremayne **B** p161

INFORMATION AND COMMUNICATION THEORY

Sequences of linear-feedback shift registers with nonlinear-feed forward logic. N. Kalouptsidis and M. Manolarakis **E** p174

INSTRUMENTATION AND MEASURING SCIENCE

Analogue multiplier/divider with digital output. J.K. Choudhury, S.N. Bhattacharyya and R. Upadhya **G** p101
Comparative study of linear prediction parameters for quantification and monitoring of dysphonic voices. C. Hernández, S. Feijoó, J.E. Arias and M.A. Bernal **A** p336
Measurement of eddy-current conductivity. A.C. Lynch, A.E. Drake and C.H. Dix **A** p254
Simplified calibration technique for general six-port reflectometer requiring only two coaxial airline standards. D. Woods **A** p250
Two-stage current transformers in differential calibration circuits. P.J. Betts **A** p324
Wiring of AC bridge networks. A.C. Lynch **A** p47

INSULATORS AND INSULATION

Behaviour of pressboard-oil insulation under alternating voltages of industrial frequency in a nonuniform electric field. P.N. Nikolopoulos and D.N. Diamantopoulos **A** p145
Evaluation of plastics insulators for use on British Railways 25kV overhead line electrification. A. Bradwell and J.C.G. Wheeler **B** d284
Testing of solid-core insulators for use on BR 25 kV electrification. J.C.G. Wheeler **B** p278

INTEGRATED CIRCUITS

Clock breakthrough in ECL integrated circuits. I. Hawker **G** p252
Integrated protection circuits against the forward biasing of the input junction in digital MOS ICs. G. Torelli and G. Salomone **I** p187
Selenium implantation into GaAs for integrated circuits. P.A. Leigh **I** p265

INTERFERENCE

Analysis of HF interference with application to digital communications. G.F. Gott, S. Dutta and P. Doany **F** p452
Identification of unwanted scatterers on a free-field EMI test range. J.C. Bennett and B. Chambers **F** p548
Minimisation of intermodulation interference. S.A. Kotsopoulos **F** p350
Polarisation-vector translation in radar systems. A.J. Poelman **F** p161

INVERTERS

Analysis of commutation of a current-source inverter feeding an induction motor,using 2-axis variables. V. Subrahmanyam **B** p355
Application of controlled flywheeling to the recovery bridge of a static Kramer drive. W. Drury, B.L. Jones and J.E. Brown **B** p73
Determination of optimum operating frequency of a current-source inverter-controlled asynchronous machine by measurement of stator voltages. B. de Fornel, J.C. Hapiot, C. Saubion and B. Trannoy **B** p207
Digital computer simulation of variable-speed PWM inverter-machine drives. S.R. Bowes and R.R. Clements **B** p149
Optimum design of a new DC-SC circuit. G.H. Cho, S.J. Jeon and S.B. Park **B** p171

Slip-power recovery scheme employing a fully controlled convertor with half-controlled characteristics. N.N. Rao, G.K. Dubey and S.S. Prabhu **B** p33
Steady-state performance of PWM inverter drives. S.R. Bowes and J. Clare **B** p229

IONISATION

Charge model for studying corona during surges on overhead transmission lines. M. Afghahi and R.J. Harrington **C** p16
Microdischarge characteristics in air gap between spherical particle and plane. Masanori Hara, Takahiko Yamashita and Masanori Akazaki **A** p329
Space-charge-limited bipolar current flow between coaxial cylindrical electrodes. C.B. Wheeler **A** p43
Toroid immersed in a homogeneous electric field. T. Slivnik **A** p261
Transient low-current arc-cathode processes on metals having a very thin oxide film in air at atmospheric pressure. A.E. Guile, K. Dimoff and A.K. Vijh **A** p379

LASERS

$Pb_{1-x}Sn_xSe/PbSe$ heterostructure lasers. F.J. Bryant, A. Qadeer and J. Reed **I** p287

LIGHTING

Lighting of cathedrals and churches. R.L.C. Tate **A** p442
Road lighting. R.A. Hargroves **A** p420

LIGHTNING AND LIGHTNING PROTECTION

Analysis and design of protection systems for structures against direct lightning strokes. Part 1: Theory. I. Izraeli and A. Braunstein **A** p140
Charge model for studying corona during surges on overhead transmission lines. M. Afghahi and R.J. Harrington **C** p16
Lightning and switching impulse breakdown of rod/plane gaps in nitrogen/freon (CCl_2F_2) mixtures. T.V. Babu Rajendran, C.S. Lakshiminarasimha and M.S. Naidu **A** p134

LINEAR MOTORS

Power-factor improvement in linear induction motors. E.R. Laithwaite and S.B. Kuznetsov **B** d60

LINEAR NETWORKS

The energy spread of electrical systems. F.M. Reza **G** p165

LOAD AND VOLTAGE REGULATION

Automatic generation control of interconnected power systems using variable-structure controllers. W-C. Chan and Y-Y. Hsu **C** d231
Economic dispatch of active power with constraint relaxation. M.R. Irving and M.J.H. Sterling **C** p172
New approach for real power loss minimisation. S. Elangovan **C** p295
New technique for optimal reactive-power allocation for loss minimisation in power systems. S. Ramalyer, K. Ramachandran and S. Hariharan **C** p178
Parallelogram theory for the solution of distributed network voltage problems by computer. E.J. Holmes and A.M. Moffatt **C** p153
Representation of non-Gaussian probability distributions in stochastic load-flow studies by the method of Gaussian sum approximations. H.R. Sirisena and E.P.M. Brown **C** p165

LOGIC

Efficient computer method for ExOR logic design. Ph.W. Besslich **E** p203
Logic design using digital summation threshold-logic gates. A. Pal **E** p32
Probability of error in combinational logic systems containing soft fails. G.R. Redinbo and G.X. Wang **E** p125
Sequences of linear-feedback shift registers with nonlinear-feed forward logic. N. Kalouptsidis and M. Manolarakis **E** p174
Synthesis of Maitra cascades by means of spectral coefficients. M. Stankovici, Z. Tosyici and S. Nikolici **E** p101

MAGNETIC DEVICES AND PROPERTIES

Behaviour of a polymer-bonded rare-earth magnet under excitation in two directions at right angles. K.J. Binns, T.S. Low and M.A. Jabbar **B** p25
Continuous power loss measurement with and against the rolling direction of electrical steel strip using nonenwrapping magnetisers. P. Beckley **A** p313
Performance and application of multistacked imbricated permanent magnet generators. K.J. Binns and T.S. Low **B** p421

MAGNETIC FIELDS

3-dimensional eddy-current calculation by the network method—formulation using magnetic scalar potential for nonconducting regions. M.J. Balchin and J.A.M. Davidson **A** p88
Analytic separation of the factors contributing to the eddy-current loss in magnetically nonlinear steel. A.L. Bowden and E.J. Davies **B** p364
Behaviour of a polymer-bonded rare-earth magnet under excitation in two directions at right angles. K.J. Binns, T.S. Low and M.A. Jabbar **B** p25
Comparison of 3-dimensional and 1-dimensional calculations of the thrust of a sector motor. A. Hameed, R. Belmans, W. Geysen, H. Jordan and A. Vandenput **B** d228
Continuous power loss measurement with and against the rolling direction of electrical steel strip using nonenwrapping magnetisers. P. Beckley **A** p313
Dual finite-element calculations for static electric and magnetic fields. P. Hammond and T.D. Tsiboukis **A** p105
Energy flow in a 2-pole hysteresis coupling by Poynting theorem. S.C. Bhargava **A** p301
Field distribution in a cylindrical shell of finite length and thickness due to an external current filament. E.E. Kriezis and D.P. Chrissoulidis **A** p46
Finite-element method for calculating power frequency 3-dimensional electromagnetic field distributions. D. Rodger **A** p233
Finite-element solution of three-dimensional electromagnetic problems. J.P. Webb, G.L. Maile and R.L. Ferrari **H** p153
General crosstalk equations between two braided coaxial cables in free space. S. Sali, F.A. Benson and J.E. Sitch **A** p306
Magnetising-field saturation and dynamic behaviour of induction machines. Part 2: Stability limits of a voltage-fed induction motor and of a self-excited induction generator. J.A.A. Melkebeek **B** p10
Magnetising-field saturation and dynamic behaviour of induction machines.Part 1: Improved calculation method for induction-machine dynamics. J.A.A. Melkebeek **B** p1
Proximity effect between a wire carrying current and a rotating cylindrical conductor. I.R. Ciric **A** p122

MATHEMATICAL TECHNIQUES

A complex gradient operator and its application in adaptive array theory. D.H. Brandwood **F** p11 **H** p11
A simple digital control scheme for a DC motor. B.A. White, R.T. Lipczynski and A.R. Daniels **B** p143
Accurate fault impedance locating algorithm. A. Wiszniewski **C** p311
Ada model arithmetic: costs and benefits. P.J.L. Wallis **E** e139
Analysis of an end junction between a coaxial waveguide,with a hollow inner,and a circular cylindrical waveguide. A.J. Sangster and D.J. McIntosh **H** p297
Application of catastrophe theory to a slotted ALOHA communication system. N.D. Birrell **F** p337
Coupling between two conical horns placed side by side. M.S. Narasimhan and K.H. Prasad **H** p358
Digital simulator of transformer windings subject to impulse voltage. S. Cristina, M. D'Amore and M. Salerno **C** d91
Discrete-time multivariable criterion for limit cycle predictions. B. Kouvaritakis and R.G. Cameron **D** p295
Dispersion characteristics of monomode optical-fibre systems. M.J. Bennett **H** p309
Duality of the discrete-time optimal filter and regulator problems. A. Johnson **D** p173
Eiganvalue analysis of 4-port crosswire YIG coupling circuit. J. Helszajn **H** p191
Field and power-density calculations by three-dimensional finite elements. M. dePourcq **H** p377
Finite-element analysis of an induction motor fed from a constant-voltage source. S. Williamson and J.W. Ralph **B** p18
Finite-element method for calculating power frequency 3-dimensional electromagnetic field distributions. D. Rodger **A** p233
Gain of an array of sensors subjected to processor perturbations. D.R. Farrier **H** p251
General computational method for performing availability analysis of power-system configurations. D.P. Papadopoulos **C** p285
Hilbert transform in impulse functions of power-transmission-line electromagnetic transient model. W.D. Humpage, K.P. Wong and T.T. Nguyen **C** p266
Improved algorithms for parameter identification in continuous systems via Walsh functions. G. Prasada Rao and K.R. Palanisamy **D** p9
Input impedance of a monopole antenna on a finite polygonal ground plane. P.E. Zimourtopoulos, J.N. Sahalos and G.A. Thiele **H** p276
Magnetising-field saturation and dynamic behaviour of induction machines.Part 1: Improved calculation method for induction-machine dynamics. J.A.A. Melkebeek **B** p1
Multivariable Nyquist plot of discrete-time stationary optimal linear filters. B. Priel and U. Shaked **D** p128
New realisation technique of high-speed discrete Fourier transform described by distributed arithmetic. W.C. Siu and C.F. Chen **E** p177
Nonlinear circuit mode analysis. D.A. Linkens **A** p69
Numerical inversion of multidimensional Laplace transformer via block-pulse functions. C. Hwang, T.Y. Guo and Y.P. Shih **D** p250
Parallelogram theory for the solution of distributed network voltage problems by computer. E.J. Holmes and A.M. Moffatt **C** p153
Production of short mechanical impulses by means of eddy currents. R.M. Bowley, P.J. King, G.J. Lewis and I. Shellard **B** p429
Representation of non-Gaussian probability distributions in stochastic load-flow studies by the method of Gaussian sum approximations. H.R. Sirisena and E.P.M. Brown **C** p165
Scalar mode analysis of parabolic index fibres using continued fractions. O.G. Leminger **H** p290
Simplified computation of coplanar waveguide with finite conductor thickness. K. Koshiji, E. Shu and S. Miki **H** p315
Simulation of a dedicated aircraft generator supplying a heavy rectified load. J.G. Kettleborough, I.R. Smith and B.A. Fanthome **B** p444
Some properties of matrix sign functions derived from continued fractions. L.S. Shieh, Y.T. Tsay and R.E. Yates **D** p111
Stability of accelerating repetitive systems. J.B. Edwards **D** p183
State forecasting in electric power systems. A.M. Leite da Silva, M.B. Do Coutto Filho and J.F. de Queiroz **C** p237
State reconstruction in low-sensitivity design of 3-dimensional systems. P. Stavroulakis and S.G. Tzafestas **D** p333
Transfer function computation and factorisation of 3-dimensional systems in state-space. S.G. Tzafestas and T.G. Pimenides **D** p231
Transfer-function models of sampled systems. J.A. Gibson and M.A. Hamilton-Jenkins **G** p37
Validity of describing function analysis for 3-phase power systems. S.N. Bhadra **C** p244
Very fast discrete Fourier transform, using number theoretic transform. W. Siu and A.G. Constantinides **G** p201

MATRIX ALGEBRA

Design of model reference systems using frequency-domain methods. P.T. Kidd and N. Munro **D** p273
Structurally fixed modes in decentralised systems. Pt. 2: General case. S. Momen and E.J. Evans **D** p322

MEASUREMENT AND MEASURING

A polyphase 500 kA current measuring system with Rogowski coils. J.A.J. Pettinga and J. Siersema **B** p360
Continuous power loss measurement with and against the rolling direction of electrical steel strip using nonenwrapping magnetisers. P. Beckley **A** p313
Estimation of low-level winds from upper-air data. M. Bennett, P.M. Hamilton and D.J. Moore **A** p517
Field distortion parameters for a nonaxisymmetric cylindrical transmission line. C.B. Edwards **A** p322

Gain of an array of sensors subjected to processor perturbations. D.R. Farrier H p251
Joule adiabatic heating of high-resistance alloys. M. Slonim A p239
Measurement of eddy-current conductivity. A.C. Lynch, A.E. Drake and C.H. Dix A p254
Measurement of piezoelectric coefficients and permittivity with small specimens. A.W. Palmer, A.C. Lynch and A.T. Parish A p129
Measurement of thermal transients in semiconductor power devices and circuits. P.W. Webb I p153
Measurements of permittivity using an open resonator. A.C. Lynch A p365
Simplified computation of coplanar waveguide with finite conductor thickness. K. Koshiji, E. Shu and S. Miki H p315
Simulation and measurement of C/V doping profiles in multilayer structures. J.E.A. Whiteaway I p165
Simulation of rectangular arrays of large charged cylinders of alternating sign by sets of line chargers. Y. Zimmels A p242
Wake structure measurements at the MOD-2 cluster test facility at Goodnoe Hills, Washington. T.G. Zambrano and G.W. Gyatt A p562
Wiring of AC bridge networks. A.C. Lynch A p47

METAL-INSULATOR-SEMICONDUCTOR STRUCTURES

Control of Schottky-diode-barrier height by Langmuir-Blodgett monolayers. C.S. Winter and R.H. Tredgold I p256
Modified strong-inversion potential for accurate modelling of long-channel MOS transistors. L.J. Stenberg I p57

METAL-OXIDE-SEMICONDUCTOR STRUCTURES

AC model for MOS transistors from transient-current computations. K.Y. Tong I p33
Comparison between two-dimensional short-channel MOSFET models. U. Kumar I p37
Comparison of MOS processes for VLSI. H.E. Oldham and S.L. Partridge I p94
Depletion mode MOSFET modelling for CAD. Sufia Haque-Ahmed and C. André T. Salama I p281
High-density one-device dynamic MOS memory cells. Kiyoo. Itoh and Hideo. Sunami I p127
Integrated protection circuits against the forward biasing of the input junction in digital MOS ICs. G. Torelli and G. Salomone I p187
Modelling of small MOS devices and device limits. P.K. Chatterjee, Ping Yang and Hisashi Shichijo I p105
New hot-carrier injection and device degradation in submicron MOSFETs. E. Takeda, Y. Nakagome, H. Kume and S. Asai I p144
Power MOSFET dynamic large-signal model. R.A. Minasian I p73
Submicron MOS process with 10:1 optical-projection printing and anisotropic dry etching. W. Müller, W. Beinvogl, L. Risch and R. Sigusch I p136

MICROPROCESSORS

A microprocessor-controlled real-time image processor. D. Lavie and W.K. Taylor E p149
A simple digital control scheme for a DC motor. B.A. White, R.T. Lipczynski and A.R. Daniels B p143
Availability modelling of multiprocessors. J.C.B. Leite and P.G. Depledge E p165
Development environment for the design and test of applications software for a distributed multiprocessor computer system. F. Halsall, R.L. Grimsdale, G.C. Shoja and J.E. Lambert E p25
Digital filter structures for canonic signed-digit code implementation by microprocessor. P.M. Hughes and B.M.G. Cheetham E p37
High-speed bus arbiter for multiprocessors. A.B. Kovaleski E p49
Microprocessor-based identification systems applied to synchronous generators with voltage regulators. R.D. Lang, H. Yee and M.A. Hutchinson C p257
New realisation technique of high-speed discrete Fourier transform described by distributed arithmetic. W.C. Siu and C.F. Chen E p177
Operational fault-tolerance microcomputer for very high reliability. M. Yaacob, M.G. Hartley and P.G. Depledge E p90
Performance evaluation of microprocessor array. H.F. Li and C.C. Lau E p65
Shared memories in the CYBA-M multimicroprocessor. E.L. Dagless, M.D. Edwards and J.T. Proudfoot E p116
Teaching digital-systems design with a microprocessor-controlled patchboard. A.J.D. Casaca and J.V. Woods E p75
The information society—the wonder that would be?. B.W. Manley A p15

MICROWAVE CIRCUITS AND NETWORKS

Analysis of millimetre-wave integrated fin line. R.N. Simons H p166
Eiganvalue analysis of 4-port crosswire YIG coupling circuit. J. Helszajn H p191
Noise performance of cavity stabilised oscillators. R. Knöchel and K. Schünemann H p281
Novel accelerator energy convertor. A.H. Falkner I p192
Numerical simulation of microstrip Baritt oscillators. P.W. Webb I p297
Physical frequency limitations of 2-terminal devices. G. Salmer I p80
Representation of coupled-cavity slow-wave structures by equivalent circuits. R.G. Carter I p67

MICROWAVE COMPONENTS

Analysis of millimetre-wave integrated fin line. R.N. Simons H p166
Analytical and numerical techniques in the Green's function treatment of microstrip antennas and scatterers. J.R. Mosig and F.E. Gardiol H p175
Characteristic impedance of elliptic cylindrical strip and microstriplines filled with layered substrate. B.N. Das, A. Chakrabarty and K.K. Joshi H p245
Direct-division phase-lock loop at 12 GHz. J. Noordanus, G. Meiling and P. van Heijningen H p463
Double Schottky-barrier diode power sensor. T.Y. An and A.L. Cullen H p160
Eiganvalue analysis of 4-port crosswire YIG coupling circuit. J. Helszajn H p191
Fast acquisition phase-locked loops for frequency agile pulsed radar systems. C.J. Ward and J.R. Forrest H p489
General properties of tensor Green's function for planar ferrite structures. R. Hoffmann H p373
Microstrip linear array with polarisation control. P.S. Hall H p215
Microwave sources and synthesisers. K.R. Slinn H p429
Mode conversion on profiled corrugated conical horns. S.F. Mahmoud H p415
Optical constants of some commercial microwave materials between 90 and 1200 GHz. J.R. Birch H p327
Scattering matrix of junctions between rectangular waveguides. R. DeSmedt and B. Denturck H p183
Sources based on switched hybrid SAW oscillators. S. Neylon and V. Wilkinson H p473
Surface acoustic wave reference oscillators for UHF and microwave generators. P.A. Moore and S.K. Salmon H p477
Temperature distribution in uniform and layered microwave absorbers in waveguide. I.A. Ali and L.J. Auchterlonie H p236

MICROWAVE MEASUREMENTS

Measurements of permittivity using an open resonator. A.C. Lynch A p365
Simplified calibration technique for general six-port reflectometer requiring only two coaxial airline standards. D. Woods A p250

MICROWAVE SYSTEMS

Field and power-density calculations by three-dimensional finite elements. M. dePourcq H p377
Industrial, scientific, medical and domestic applications of microwaves. M.A. Stuchly and S.S. Stuchly A p467
Low-noise microwave-frequency synthesisers: design principles. V.F. Kroupa H p483
Measurement of switching characteristics of agile frequency sources. P.G.A. Jones and I.D. Kimber H p495
Optimisation and synthesis of low phase-noise microwave-feedback oscillators. P.R. Shepherd and E. Vilar H p437
Phase-locked upconvertors in synthesisers for agile pulse-compression radars. M. Lewis H p456
Synthesised signal generator: a design example. P. McAllister H p451

MODELLING

AC model for MOS transistors from transient-current computations. K.Y. Tong I p33
Availability modelling of multiprocessors. J.C.B. Leite and P.G. Depledge E p165
Comparison between two-dimensional short-channel MOSFET models. U. Kumar I p37
Dual finite-element calculations for static electric and magnetic fields. P. Hammond and T.D. Tsiboukis A p105
Empirical model for gallium arsenide MESFETs. D.J. Brown I p29
Modified strong-inversion potential for accurate modelling of long-channel MOS transistors. L.J. Stenberg I p57
Numerical solutions for surface electric field distributions in avalanching *p-i-n* power diodes. V.K. Pathak and J. Gowar I p17
Power MOSFET dynamic large-signal model. R.A. Minasian I p73
Real-time monitoring of power systems using fast second-order method. L. Roy and N.D. Rao C p103
Simulation of a dedicated aircraft generator supplying a heavy rectified load. J.G. Kettleborough, I.R. Smith and B.A. Fanthome B p444
Static model of DH laser. J. Machaicy I p61
Two-dimensional finite-element simulation of a permeable-base transistor. A. Marty, J. Clarac, J.P. Bailbe and G. Rey I p24

MODULATION

An easy way to calculate power spectra for digital FM. Tor Aulin and Carl-Erik Sundberg F p519
Characteristics of demodulated narrowband SSB-FM systems. L. Brisson Lopes and G.B. Lockhart F p166
Data transmission over VHF and UHF land mobile radio channels. P.J. Cadman and R.L. Brewster F p527
Intermodulation spectra for 2-carrier-level SCPC system. M.T. Abuelma'atti G p25

MOTORS

A simple digital control scheme for a DC motor. B.A. White, R.T. Lipczynski and A.R. Daniels B p143
An auxiliary armature squirrel cage and a secondary commutating field in DC machines. L.A. Agu B p71
Determination of optimum operating frequency of a current-source inverter-controlled asynchronous machine by measurement of stator voltages. B. de Fornel, J.C. Hapiot, C. Saubion and B. Trannoy B p207
Effect of stator slotting on the performance of sheet-rotor induction motors. D.E. Hesmondhalgh and D. Tipping B p395
General theory of fast-fronted interturn voltage distribution in electrical machine windings. M.T. Wright, S.J. Yang and K. McLeay B p245
Generalised analysis for steady-state characteristics of DC commutatorless motors. Y. Takeda, S. Morimoto and T. Hirasa B p373
Mathematical model and electric-circuit simulation of DC machines. R.S. Ramshaw and G. Xie B p218
Microprocessor control of triac cycloconvertor. S.K. Tso and C.C. Leung B p193
Optimum design of shaded-pole motors by means of 2-phase symmetrical components. T. Yokozuka B p341
Power-factor improvement in linear induction motors. E.R. Laithwaite and S.B. Kuznetsov B d60
The influence of coil and surge parameters on transient interturn voltage distribution in stator windings. M.T. Wright, S.J. Yang and K. McLeay B p257
Ward-Leonard characteristics from nonlinearly-controlled series-motor drives. J.B. Edwards, K. Pacey and T.A. Al-Fileyeh B p302

MULTIVARIABLE CONTROL SYSTEMS

Design of robust digital set-point tracking controllers for linear multivariable plants with time-delayed inputs. B. Porter D e82
Discrete-time approximation of multivariable continuous-time systems. N.K. Sinha and Zhou Qi-Jie D p103
Discrete-time multivariable criterion for limit cycle predictions. B. Kouvaritakis and R.G. Cameron D p295

Fast suboptimal state-space self-tuner for linear stochastic multivariable systems. L.S. Shieh, C.T. Wang and Y.T. Tsay **D** p143
Multivariable Nyquist plot of discrete-time stationary optimal linear filters. B. Priel and U. Shaked **D** p128
Multivariable pole assignment self-tuning regulator. P.E. Wellstead **D** d200
Robust controller design for linear dynamic systems using approximate models. D.H. Owens and A. Chotai **D** p45
Robust multivariable control of a binary distillation column. G.W.M. Coppus, S.L. Shah and R.K. Wood **D** p201
Variable-structure systems and system zeros. O.M.E. El-Ghezawi, S.A. Billings and A.S.I. Zinober **D** p1

NATURAL RESOURCES

Operation and control of a 2GW wave-energy scheme. H.W. Whittington and J.R. Jordan **A** p340

NETWORKS

An insensitive adjustable allpass network. G. Wilson **G** p213
Analysis of switched-capacitor networks containing operational amplifiers with finite DC gain and bandwidth product values. B.B. Bhattacharyya and R. Raut **G** p114
Decoupled load flow with variables in rectangular form. B.S. Babici **C** p98
Design of multistage interconnection networks. A.K. Sood **E** p109
Energy storage and flow control by means of a 2-port, time-variable coupling network. S. Singer **G** p7
New solution for the ideal filter approximation problem. V.B. Litovski and D.P. Milovanovicu **G** p161
Nonlinear resistive network synthesis. S. Osowski **G** p15
Optimum passive integrators. S.C. DuttaRoy **G** p196
Simplified calibration technique for general six-port reflectometer requiring only two coaxial airline standards. D. Woods **A** p250

NOISE AND INTERFERENCE

Computer simulation of the use of Barker phase codes for the detection of overlapping targets in clutter. O.A. Liberg and G.B. Morgan **F** p557
Deriving delayed sequences from pseudo-random-noise generators using exclusive NOR feedback. J.R. Jordan and B. Kiani-Shabestari **G** p89
Electronic steering of antenna nulls for interference reduction. J.K. Webb **F** p417
Environmental aspects of large-scale wind-power systems in the UK. A. Robson **A** p620
Mott-barrier mixer diodes with improved semiconductor profiles for cooled operation at submillimetre wavelengths. N.J. Keen **I** p171
Noise loading analysis of a memoryless bandpass system with amplitude nonlinearity and AM/PM conversion. M.T. Abuelma'atti **A** p152
Noise performance of state-space active filters. D.T. Nguyen and L.H. Ting **G** p217
Prediction of long-line radio-interference field from measurements on multiconductor short-line. S. Cristina and M. D'Amore **C** p83

NONLINEAR SYSTEMS

Computer-aided design of feedback controllers for nonlinear systems with applications to control of a double-inverted pendulum. M. Sahba **D** p350
Decentralised nonlinear adaptive feedback stabilisation of large-scale interconnected systems. A. Hmamed and L. Radouane **D** p57
Discrete-time multivariable criterion for limit cycle predictions. B. Kouvaritakis and R.G. Cameron **D** p295
Globally stable nonlinear flight control system. D. McLean **D** p93
Nonlinear resistive network synthesis. S. Osowski **G** p15
Optimal control of power system generators incorporating nonlinear state feedback. M. Sahba **D** p345
Robust control of a class of nonlinear servomechanism problem. R. Doraiswami **D** p63
Ward-Leonard characteristics from nonlinearly-controlled series-motor drives. J.B. Edwards, K. Pacey and T.A. Al-Fileyeh **B** p302

NUMERICAL ANALYSIS

Analytical and numerical techniques in the Green's function treatment of microstrip antennas and scatterers. J.R. Mosig and F.E. Gardiol **H** p175
General properties of tensor Green's function for planar ferrite structures. R. Hoffmann **H** p373
Mode conversion on profiled corrugated conical horns. S.F. Mahmoud **H** p415
Scattering matrix of junctions between rectangular waveguides. R. DeSmedt and B. Denturck **H** p183

OPTICAL FIBRES

An optical fibre section in the Cambridge digital ring. D.J. Hunkin and G.W. Litchfield **E** p154
Asymptotic theory of vector modes in inhomogeneous optical fibres: uncladded fibres. M. Hashimoto **H** p261
Dispersion characteristics of monomode optical-fibre systems. M.J. Bennett **H** p309
Microbending loss in optical waveguides. J.M. Arnold and R. Allen **H** p331
Radiation from graded-index single-mode fibres. C.D. Hussey **H** p225

OPTICAL PROCESSING

Submicron MOS process with 10:1 optical-projection printing and anisotropic dry etching. W. Müller, W. Beinvogl, L. Risch and R. Sigusch **I** p136

OPTICAL SYSTEMS

Scalar mode analysis of parabolic index fibres using continued fractions. O.G. Leminger **H** p290

OPTICS

Asymptotic theory of vector modes in inhomogeneous optical fibres: uncladded fibres. M. Hashimoto **H** p261
Optical constants of some commercial microwave materials between 90 and 1200 GHz. J.R. Birch **H** p327
Radiation from graded-index single-mode fibres. C.D. Hussey **H** p225
Studies on certain modified Luneberg lenses. M. Barakat and L. Shafai **H** p363

OPTIMAL CONTROL

Automatic generation control of an interconnected hydrothermal system in continuous and discrete modes considering generation rate constraints. J. Nanda, M.L. Kothari and P.S. Satsangi **D** p17
Fast suboptimal state-space self-tuner for linear stochastic multivariable systems. L.S. Shieh, C.T. Wang and Y.T. Tsay **D** p143
Multivariable Nyquist plot of discrete-time stationary optimal linear filters. B. Priel and U. Shaked **D** p128
Optimal control of linear systems with delays in state and control via Walsh functions. K.R. Palanisamy and G.P. Rao **D** p300
Optimal control of power system generators incorporating nonlinear state feedback. M. Sahba **D** p345
Sensitivity reduced design of discrete linear regulator with prescribed degree of stability. M. Gopal and J.G. Ghodekar **D** p261
Singular-perturbation method for discrete models of continuous systems in optimal control. P.K. Rajagopalan and D.S. Naidu **D** d136

OPTIMISATION

Loss-optimal PWM waveforms for variable-speed induction-motor drives. F. De Buck, P. Gistelinck and D. De Backer **B** p310
Methods and concepts of dominance optimisation. G.F. Bryant and L.F. Yeung **D** p72
Optimum passive integrators. S.C. DuttaRoy **G** p196

OPTOELECTRONICS

Liquid-crystal displays: an established example of molecular electronics. I.A. Shanks **I** p198
Molecular electro-optics. B.R. Jennings **I** p212
Molecular electronics.(Editorial). G.G. Roberts **I** p197
Organic fatigue-resistant photochromic imaging materials. H.G. Heller **I** p209
Practical comparisons of optoelectronic sampling systems and devices. J.K.A. Everard and J.E. Carroll **I** p5

OSCILLATORS

Four-phase characteristics of a multimode oscillator with second and third harmonic oscillations. H. Umeda and M. Nakajima **G** p257
Low-noise synthesiser for radar and communications. K.R. Slinn, P.A. Volckman and E. Scherer **H** p430
Noise performance of cavity stabilised oscillators. R. Knöchel and K. Schünemann **H** p281
Nonlinear circuit mode analysis. D.A. Linkens **A** p69
Numerical simulation of microstrip Baritt oscillators. P.W. Webb **I** p297
Optimisation and synthesis of low phase-noise microwave-feedback oscillators. P.R. Shepherd and E. Vilar **H** p437
Simple switched-capacitor voltage-controlled oscillator. H. Jamal, A. Zafrullah and F.E. Holmes **G** p263
Surface acoustic wave reference oscillators for UHF and microwave generators. P.A. Moore and S.K. Salmon **H** p477
Synthesised signal generator: a design example. P. McAllister **H** p451
Two new single op-amp RC bridge-T oscillator circuits. N. Boutin **G** p222
Ultra-wideband millimetre-wave self-oscillating mixer. M.J. Lazarus and F.R. Pantoja **H** p340

OVERHEAD LINES

Charge model for studying corona during surges on overhead transmission lines. M. Afghahi and R.J. Harrington **C** p16
Statistical approach to thermal rating of overhead lines for power transmission and distribution. C.F. Price and R.R. Gibbon **C** p245

OVERVOLTAGES

Temporary overvoltages due to load rejection on a series-compensated transmission line. R. Balasubramanian, Babu Ram and S.C. Tripathy **C** p8

PATTERN RECOGNITION

A microprocessor-controlled real-time image processor. D. Lavie and W.K. Taylor **E** p149

PERTURBATION THEORY

Singular-perturbation method for discrete models of continuous systems in optimal control. P.K. Rajagopalan and D.S. Naidu **D** d136

POLES AND ZEROS

Computing system roots and their sensitivities. N.K. Jain and K. Singhal **G** p178
Factor division: a useful algorithm in model reduction. T.N. Lucas **D** p362
Variable-structure systems and system zeros. O.M.E. El-Ghezawi, S.A. Billings and A.S.I. Zinober **D** p1

POLYNOMIALS

Autopilot for ship control, Pt. 1: Theoretical design. C.C Lim and W. Forsythe **D** p281

POWER ELECTRONICS

Design of LC input filter for multiphase DC choppers. M.H. Rashid **B** p39
Slip-power recovery scheme employing a fully controlled convertor with half-controlled characteristics. N.N. Rao, G.K. Dubey and S.S. Prabhu **B** p33

POWER SYSTEM PROTECTION

Accurate fault impedance locating algorithm. A. Wiszniewski **C** p311
Coherency-based identification of optimum site for stabiliser applications. T. Hiyama **C** p71

Computer prediction of IDMT relay settings and performance for interconnected power systems. J.P. Whiting and D. Lidgate **C** p139
Computerised in-situ testing of feeder protections. A.C. Webb **C** p51
Discriminative response of distance protection in reverse-fault operation. W.D. Humpage and K.P. Wong **C** p217
General computational method for performing availability analysis of power-system configurations. D.P. Papadopoulos **C** p285
Harmonic reduction in the static var compensator by sequence control of transformer taps. H.K. Patel and G.K. Dubey **C** p300
Improved input signals to the polarised-mho distance relay. V. Cook **C** p206
Interactive security evaluation in power-system operation. A.O. Ekwue and M.J. Short **C** p61
Joule adiabatic heating of high-resistance alloys. M. Slonim **A** p239
Microprocessor-based algorithm for high-resistance earth-fault distance protection. Q.S. Yang and I.F. Morrison **C** p306
New ultra-speed distance protection using finite-transform techniques. A.T. Johns and M.A. Martin **C** p127
Simplified analysis of transient due to fault initiation on double-ended overhead and underground transmission lines. K. Matsuura and H. Kinoshita **C** p75
Temporary overvoltages due to load rejection on a series-compensated transmission line. R. Balasubramanian, Babu Ram and S.C. Tripathy **C** p8
Third-harmonic current from unbalanced AC/DC convertors. R. Yacamini and W.J. Smith **C** p122

POWER SYSTEMS AND PLANT

Assessment of hydroturbine models for power-systems studies. J.R. Smith, R. McLean and J.F Robbie **C** p1
Automatic generation control of an interconnected hydrothermal system in continuous and discrete modes considering generation rate constraints. J. Nanda, M.L. Kothari and P.S. Satsangi **D** p17
Automatic generation control of interconnected power systems using variable-structure controllers. W-C. Chan and Y-Y. Hsu **C** d231
Decoupled load flow with variables in rectangular form. B.S. Babici **C** p98
Economic dispatch of active power with constraint relaxation. M.R. Irving and M.J.H. Sterling **C** p172
Engineering studies for Itaipu convertor station design. C.A.O. Peixoto, S.O. Frontin and J.A. Jardini **C** p41
Harmonic reduction in the static var compensator by sequence control of transformer taps. H.K. Patel and G.K. Dubey **C** p300
Interactive security evaluation in power-system operation. A.O. Ekwue and M.J. Short **C** p61
New approach for real power loss minimisation. S. Elangovan **C** p295
New technique for optimal reactive-power allocation for loss minimisation in power systems. S. Ramalyer, K. Ramachandran and S. Hariharan **C** p178
Real-time monitoring of power systems using fast second-order method. L. Roy and N.D. Rao **C** p103
State forecasting in electric power systems. A.M. Leite da Silva, M.B. Do Coutto Filho and J.F. de Queiroz **C** p237
Steady-state stability of an HVDC system using frequency-response methods. R. Yacamini and A.M.I. Taalab **C** p194
Temporary overvoltages due to load rejection on a series-compensated transmission line. R. Balasubramanian, Babu Ram and S.C. Tripathy **C** p8
Third-harmonic current from unbalanced AC/DC convertors. R. Yacamini and W.J. Smith **C** p122
Use of frequency-scan techniques for subsynchronous-resonance analysis of a practical series-capacitor compensated AC network. M. El-Marsafawy **C** p28
Validity of describing function analysis for 3-phase power systems. S.N. Bhadra **C** p244
z-transform transient analysis in power systems. W.D. Humpage **C** d227

POWER TRANSMISSION AND DISTRIBUTION

Economic dispatch of active power with constraint relaxation. M.R. Irving and M.J.H. Sterling **C** p172
Electricity supply—the changing phases. W.K. Harrison **C** p269
Engineering studies for Itaipu convertor station design. C.A.O. Peixoto, S.O. Frontin and J.A. Jardini **C** p41
Fault location for transmission lines with current-transformer saturation. G.G. Richards and O.T. Tan **C** p22
New cycloconvertor for power-system high-frequency links. M.K. Forster and J.T. Boys **C** p111
Ocean thermal-energy conversion. G. Ford, C. Niblett and L. Walker **A** p93
Parallelogram theory for the solution of distributed network voltage problems by computer. E.J. Holmes and A.M. Moffatt **C** p153
Representation of non-Gaussian probability distributions in stochastic load-flow studies by the method of Gaussian sum approximations. H.R. Sirisena and E.P.M. Brown **C** p165
Statistical approach to thermal rating of overhead lines for power transmission and distribution. C.F. Price and R.R. Gibbon **C** p245
Steady-state stability of an HVDC system using frequency-response methods. R. Yacamini and A.M.I. Taalab **C** p194
The organisation of electricity supply in the UK — a personal view. G.T. Shepherd **C** p148
z-transform transient analysis in power systems. W.D. Humpage **C** d227

POWER UTILISATION AND INDUSTRIAL APPLICATIONS

Long-term management of energy. M.W. Thring **A** p281
Ocean thermal-energy conversion. G. Ford, C. Niblett and L. Walker **A** p93

PROCESS CONTROL

CONIC: an integrated approach to distributed computer control systems. J. Kramer, J. Magee, M. Sloman and A. Lister **E** p1
Computer-aided design of structurally constrained multivariable regulators, Pt. 2: Applications. G. Guardabassi, A. Locattelli, C. Maffezzoni and N. Schiavoni **D** p165
Identification of stochastic time-varying systems. K.A.F. Moustafa **D** p137
Robust controller design for linear dynamic systems using approximate models. D.H. Owens and A. Chotai **D** p45

PROJECT AND PRODUCTION ENGINEERING

An example of product innovation in a simple power outlet. J.B. Izatt **A** p223
Design for quality. Rear Admiral D.G. Spickernell **A** p159
Design of electronic equipment for broadcasting. F.G. Parker **A** p190
Ergonomics: designing for the user. D. Whitfield **A** p162
Man-machine interface design. C.H. Flurscheim **A** p167
Management of the design of large turbine generators. R. Hawley and B.A. Marlow **A** p207
Manufacturing systems and the engineer. S. Daughters **A** p63
Review of design methodology. L. Finkelstein and A.C.W. Finkelstein **A** p213
Science and style.The integrating function of design. Frank Height **A** p180
Specification languages. P. Blackledge **A** p185
The engineer in the middle ground of manufacture. J. Banks **A** p1
The importance of design. William Barlow **A** p224
The many facets of engineering design. K.K. Schwarz **A** p196
The role of the consulting engineer in the design of high-voltage power transmission projects overseas. A.B. Wood and M.W. Kennedy **A** p202

PULSE-CODE MODULATION

Loss-optimal PWM waveforms for variable-speed induction-motor drives. F. De Buck, P. Gistelinck and D. De Backer **B** p310
Steady-state performance of PWM inverter drives. S.R. Bowes and J. Clare **B** p229

RADAR AND RADIONAVIGATION

Adaptive canceller for elevation angle estimation in the presence of multipath. S. Haykin and J. Kesler **F** p303
Adaptive clutter supression for airborne phased array radars. R. Klemm **F** p125 **H** p125
Bandwidth reduction strategies for the transmission of land-based marine radar data. G.L. Austin, M.M. Riley and E.H. Ballantyne **F** p185
Computer simulation of the use of Barker phase codes for the detection of overlapping targets in clutter. O.A. Liberg and G.B. Morgan **F** p557
Effects of finite word length on FIR filters for MTD processing. E. D'Addio and G. Galati **F** p573
Experimental linear phased array with partial adaptivity. B. Wardrop **F** p118 **H** p118
Experimental open-loop canceller for radar. T.A. Bristow **F** p109 **H** p109
Fast acquisition phase-locked loops for frequency agile pulsed radar systems. C.J. Ward and J.R. Forrest **H** p489
Low-noise synthesiser for radar and communications. K.R. Slinn, P.A. Volckman and E. Scherer **H** p430
Multistatic radar detection: synthesis and comparison of optimum and sub-optimum receivers. Ernesto Conte, Egido D'Addio, Alfonso Farina and Maurizio Longo **F** p484
New technique for the evaluation of the scattering cross-sections of radar corner reflectors. K.M. Keen **H** p322
Open-loop adaptivity for rotating antennas. D. Stone **F** p114 **H** p114
Optimisation of a generalised square-law detector. F.R. Castella **F** p405
Performance of a two-stage nonparametric conditional detector for Rician density. S. Tantaratana **F** p331
Phase-locked upconvertors in synthesisers for agile pulse-compression radars. M. Lewis **H** p456
Polarisation-vector translation in radar systems. A.J. Poelman **F** p161
Radar performance studies of adaptive lattice clutter-supression filters. C. Gibson and S. Haykin **F** p357
Sacrifices in radar clutter suppression due to compromises in implementation of digital Doppler filters. J.W. Taylor **F** d574
Side-looking sonar or radar using phase difference monopulse techniques.Coherent and noncoherent applications. P.T. Gough **F** p392
The development of tracking systems. H.A. Prime **A** p8
Weibull - distributed sea clutter. M. Sekine, T. Musha, Y. Tomita, T. Hagisawa, T. Irabu and E. Kiuchi **F** p476

RADIO-WAVE PROPAGATION
(incl. Ionospheric and Tropospheric)

Comparison of the bistatic cross-section and reflectivities of spherical and spheroidal raindrops at microwave frequencies. D.G. Charlton, A.R. Holt and B.G. Evans **F** p317
Consideration of the usefulness of microwave propagation prediction methods on air-to-ground paths. T. Almond and J. Clarke **F** p649
Duct propagation modelling for the integrated-refractive-effects prediction system (IREPS). G.B. Baumgartner, H.V. Hitney and R.A. Pappert **F** p630
External modes of two-dimensional thin scatterers. A. Frenkel **H** p209
Millimetre-wave propagation along railway lines. H. Meinel and A. Plattner **F** p688
Mobile radio propagation in rural areas at 168, 455 and 896 MHz. J.D. Parsons, M.F. Ibrahim and R.J. Holbeche **F** p701
Natural focusing and catastrophes. J.H. Hannay **F** p623
Performance of an interferometer angle-measuring receiver against non-line-of-sight transmitters. A.R. Cusdin and N.C.W. Fane **F** p695
Propagation and scattering in MF/HF groundwave radar. E.D.R. Shearman **F** p579
Radiosonde errors and spurious surface-based ducts. R.A. Helvey **F** p643
Radiowave propagation (Editorial). S. Rotherham **F** p577
Review of slant path propagation mechanisms and their relevance to systems performance. P.G. Davies and J.R. Norbury **F** p665
Scattering from a random layer with applications to snow, vegetation and sea ice. A.K. Fung and H.J. Eom **F** p591
Simple M-factor algorithm for improved estimation of the basic maximum usable frequency of radio waves reflected from the ionospheric F-region. M. Lockwood **F** p296
Tropospheric effects on line-of-sight links at 36 GHz and 55 GHz. F.C. Medeiros Filho, D.A.R. Jayasuriya and R.S. Cole **F** p679

RADIOCOMMUNICATION

19 GHz digital radio-relay and the weather. R.S. Swain **F** p506
Characteristics of demodulated narrowband SSB-FM systems. L. Brisson Lopes and G.B. Lockhart **F** p166
Coefficient perturbation adaptive HF array. J.E. Hudson, A.S. Ratner and A.C. Cantoni **F** p91 **H** p91
Minimisation of intermodulation interference. S.A. Kotsopoulos **F** p350
Propagation due to tropospheric inhomogeneities. L. Boithias and J. Battesti **F** p657
Signal strength prediction in built-up areas. Part 1: Median signal strength. M.F. Ibrahim and J.D. Parsons **F** p377

Signal strength prediction in built-up areas. Part 2: Signal variability. J.D. Parsons and M.F. Ibrahim F p385
UHF circular arrays incorporating open-loop null steering for communications. J.R.F. Guy and D.E.N. Davies F p67 H p67

RADIONAVIGATION

Direction finding using an adaptive null tracker. P. Barton F p78 H p78
Perturbation adaptive array processor for airborne application. J. Kilvington F p84 H p84

RAILWAY ELECTRIFICATION AND TRANSPORTATION

Electrification of Taiwan main-line railway from Keelung to Kaohsiung. S.H. Case, A.M. Hayes, J.H. McNeil, R.E. Morrison and E.E. Riches B p289
Electrification of the Midland Suburban services. N. Howard B p109
Evaluation of plastics insulators for use on British Railways 25kV overhead line electrification. A. Bradwell and J.C.G. Wheeler B d284
Testing of solid-core insulators for use on BR 25 kV electrification. J.C.G. Wheeler B p278

RELAYS

Computerised in-situ testing of feeder protections. A.C. Webb C p51
Improved input signals to the polarised-mho distance relay. V. Cook C p206
Microprocessor-based algorithm for high-resistance earth-fault distance protection. Q.S. Yang and I.F. Morrison C p306

REVIEWS OF PROGRESS

Langmuir-Blodgett electron-beam resists. I.R. Peterson I p252
Liquid-crystal displays: an established example of molecular electronics. I.A. Shanks I p198
Review of transducer application of polyvinylidene fluoride. H.R. Gallantree I p219
Reviewing the reviews (Editorial). F.A. Benson A p401
Wake and cluster research: past, present and future. D.J. Milborrow A p566

SATELLITE LINKS AND SPACE COMMUNICATION

Adaptive antenna design considerations for satellite communication antennas. J.T. Mayhan F p98 H p98
Delay analysis of a satellite channel reservation system with variable frame format. H. Mine, K. Ohno and T. Shioyama F p343
Intermodulation spectra for 2-carrier-level SCPC system. M.T. Abuelma'atti G p25
Low-phase-noise synthesisers for SHF satcom. W.P. Robins H p445
MSK and offset QPSK signal transmissions through nonlinear satellite channels in the presence of intersymbol interference. N. Ekanayake F p513

SCHOTTKY-BARRIER DEVICES

Two-dimensional finite-element simulation of a permeable-base transistor. A. Marty, J. Clarac, J.P. Bailbe and G. Rey I p24

SEMICONDUCTOR DEVICES AND MATERIALS

AC model for MOS transistors from transient-current computations. K.Y. Tong I p33
Chemical-sensitive field-effect transistors. A. Sibbald I p233
Chemistry of polymeric resists useful in microlithography. A. Ledwith I p245
Comparison between two-dimensional short-channel MOSFET models. U. Kumar I p37
Comparison of MOS processes for VLSI. H.E. Oldham and S.L. Partridge I p94
Conducting polymers. D. Bloor and B. Movaghar I p225
Control of Schottky-diode-barrier height by Langmuir-Blodgett monolayers. C.S. Winter and R.H. Tredgold I p256
Direct-gap group IV semiconductors based on tin. C.H.L. Goodman I e46
Double Schottky-barrier diode power sensor. T.Y. An and A.L. Cullen H p160
Empirical model for gallium arsenide MESFETs. D.J. Brown I p29
High-density one-device dynamic MOS memory cells. Kiyoo. Itoh and Hideo. Sunami I p127
Low-voltage direct-current electroluminescence in ZnS:RE thin films. F.J. Bryant and A. Krier I p160
Measurement of thermal transients in semiconductor power devices and circuits. P.W. Webb I p153
Modelling DC characteristics of dual-gate GaAs MESFETs. R.A. Minasian I p182
Modified strong-inversion potential for accurate modelling of long-channel MOS transistors. L.J. Stenberg I p57
Molecular electronics. (Editorial). G.G. Roberts I p197
Mott-barrier mixer diodes with improved semiconductor profiles for cooled operation at submillimetre wavelengths. N.J. Keen I p171
Negative differential resistivity in field-effect transistors. C. Moglestue I p275
New hot-carrier injection and device degradation in submicron MOSFETs. E. Takeda, Y. Nakagome, H. Kume and S. Asai I p144
Numerical solutions for surface electric field distributions in avalanching *p-i-n* power diodes. V.K. Pathak and J. Gowar I p17
$Pb_{1-x}Sn_xSe/PbSe$ heterostructure lasers. F.J. Bryant, A. Qadeer and J. Reed I p287
Phthalocyanine Langmuir-Blodgett-film gas detector. S. Baker, G.G. Roberts and M.C. Petty I p260
Physical explanation of GaAs MESFET I/V characteristics. M.A.R. Al-Mudares and K.W.H. Foulds I p175
Physical frequency limitations of 2-terminal devices. G. Salmer I p80
Power MOSFET dynamic large-signal model. R.A. Minasian I p73
Practical comparisons of optoelectronic sampling systems and devices. J.K.A. Everard and J.E. Carroll I p5
Selenium implantation into GaAs for integrated circuits. P.A. Leigh I p265
Simulation and measurement of C/V doping profiles in multilayer structures. J.E.A. Whiteaway I p165
Stability of amorphous-silicon thin-film transistors. M.J. Powell and D.H. Nicholls I p2
Theory of the triangular-barrier switch. S.E-D. Habib and K. Board I p292
Two-dimensional finite-element simulation of a permeable-base transistor. A. Marty, J. Clarac, J.P. Bailbe and G. Rey I p24
Ultra-wideband millimetre-wave self-oscillating mixer. M.J. Lazarus and F.R. Pantoja H p340

SEMICONDUCTOR LASERS

Lateral current spreading in stripe-contact semiconductor lasers. S.J. Chua, M.S. Leong and D.S.H. Chan I p302
Optimum designs for InGaAsP/InP ($\lambda = 1.3\mu m$) planoconvex waveguide lasers under lasing conditions. M. Ueno, R. Lang, S. Matsumoto, H. Kawano, T. Furuse and I. Sakuma I e79
Practical comparisons of optoelectronic sampling systems and devices. J.K.A. Everard and J.E. Carroll I p5
Static model of DH laser. J. Machaicy I p61

SIGNAL PROCESSING

Acquisition performance of 2nd-order phase-locked loops in the presence of time delay for switched and swept signal conditions. J.P. McGeehan and A. Lymer G p131
Adaptive Walsh equaliser for data transmission. K.M. Wong and Y.G. Jan F p153
An optical fibre section in the Cambridge digital ring. D.J. Hunkin and G.W. Litchfield E p154
Analysis of a generalised framework for spectral estimation. Part 1: The technique and its mean value. G. Clifford Carter and Albert H. Nuttall F p239
Analysis of a generalised framework for spectral estimation. Part 2: Reshaping and variance results. A.H. Nuttall F p242
Bit-level systolic array circuit for matrix vector multiplication. J.V. McCanny and J.G. McWhirter G p125
Characteristic frequency responses of broadband adaptive arrays. J.E. Hudson F p267
Computer generation of a slowly varying pseudorandom process. K. Wesolowski F p314
Computer simulation of the use of Barker phase codes for the detection of overlapping targets in clutter. O.A. Liberg and G.B. Morgan F p557
Dependent and independent sensitivities in signal-flow graphs. C. Acar G p97
Detection process of a 9600 bit/s serial modem for HF radio links. A.P. Clark and H.Y. Najdi F p368
Digital signal processing schemes for efficient interpolation and decimation. R.A. Valenzuela and A.G. Constantinides G p225
Duality for multidimensional MEM spectral analysis. J.H. McClellan and S.W. Lang F p230
Effects of finite word length on FIR filters for MTD processing. E. D'Addio and G. Galati F p573
Efficient algorithm for ARMA spectral estimation. B. Friedlander F p195
Experimental comparison of three multichannel linear prediction spectral estimators. S. L. Marple Jr. and A.H. Nuttall F p218
Hardware-based Fourier transforms: algorithms and architectures. T.E. Curtis and J.T. Wickenden F p423
Hybrid frequency-domain coding of speech signals. S.W. Foo and L.F. Turner F p459
Least-squares lattice algorithm for adaptive channel equalisation.A simplified derivation. J.G. McWhirter and T.J. Shepherd F p532
MSK and offset QPSK signal transmissions through nonlinear satellite channels in the presence of intersymbol interference. N. Ekanayake F p513
New algorithm for spectrum estimation and an associated VLSI design. C.E. Goutis and M.K. Ibrahim F p250
Optimum block quantisation in signal processing. D.K. Mitrakos and A.G. Constantinides F p543
Parallel architectures for computing cyclic convolutions. C.S. Yeh, I.S. Reed and T.K. Truong F p409
Parallel pipeline fast Fourier transformer. J.A. Johnston F p564
Performance of a two-stage nonparametric conditional detector for Rician density. S. Tantaratana F p331
Power estimation for an array of sensors and its use in broadband detection. D.R. Farrier and T.J. Hicks F p261
Practical-BIBO stability of n-dimensional discrete systems. P. Agathoklis and L.T. Bruton G p236
Remarks on the statistical behaviour of orthogonal beamforming. J.F. Böhme F p256
Sacrifices in radar clutter suppression due to compromises in implementation of digital Doppler filters. J.W. Taylor F d574
Simple nonlinear equalisers for binary baseband signals. A.P. Clark, M. Slater and K. ParamaRaj F p495
Singular-value decomposition approach to time series modelling. J.A. Cadzow, B. Baseghi and T. Hsu F p202
Spatial lattice filter for high-resolution spectral analysis of array data. K.C. Sharman and T.S. Durrani F p279
Spectral analysis (Editorial). T.S. Durrani F p193
Spectral estimation using an adaptive oscillator. L.J. Griffiths and KevinB. McGregor F p246
Statistical efficiency of correlation-based methods for ARMA spectral estimation. M. Kaveh and S.P. Bruzzone F p211
Time delay estimation with receivers of approximately known phase difference characteristics. Y.T. Chan, R. Inkol and S. Simmons F p272
UHF circular arrays incorporating open-loop null steering for communications. J.R.F. Guy and D.E.N. Davies F p67 H p67
Unifying approach to spectral estimation. M. Bertran-Salvans F p236
Upper bounds on time jitter and sampling rate errors. G.C. Stey G p210

SIMULATION

A queueing analysis of a symmetric multiprocessor with shared memories and buses. J. Kriz E p83
Assessment of hydroturbine models for power-systems studies. J.R. Smith, R. McLean and J.F Robbie C p1
Autopilot for ship control, Pt. 2: Simulation studies. C.C. Lim and W. Forsythe D p288
Computer prediction of IDMT relay settings and performance for interconnected power systems. J.P. Whiting and D. Lidgate C p139
Determination of model parameters of synchronous machines. I.M. Canay B p86
Digital computer simulation of variable-speed PWM inverter-machine drives. S.R. Bowes and R.R. Clements B p149

Discrete-time approximation of multivariable continuous-time systems. N.K. Sinha and Zhou Qi-Jie **D** p103
Mathematical model and characteristics of parametric transformers. I.R. Smith and E.S. Tez **B** d69
Mathematical model and electric-circuit simulation of DC machines. R.S. Ramshaw and G. Xie **B** p218
Modelling DC characteristics of dual-gate GaAs MESFETs. R.A. Minasian **I** p182
Numerical simulation of microstrip Baritt oscillators. P.W. Webb **I** p297
Simulation of a dedicated aircraft generator supplying a heavy rectified load. J.G. Kettleborough, I.R. Smith and B.A. Fanthome **B** p444
Teaching digital-systems design with a microprocessor-controlled patchboard. A.J.D. Casaca and J.V. Woods **E** p75
Transfer-function models of sampled systems. J.A. Gibson and M.A. Hamilton-Jenkins **G** p37

STABILISERS

Coherency-based identification of optimum site for stabiliser applications. T. Hiyama **C** p71

STABILITY

Decentralised nonlinear adaptive feedback stabilisation of large-scale interconnected systems. A. Hmamed and L. Radouane **D** p57
Magnetising-field saturation and dynamic behaviour of induction machines. Part 2: Stability limits of a voltage-fed induction motor and of a self-excited induction generator. J.A.A. Melkebeek **B** p10
Robust controller design for linear dynamic systems using approximate models. D.H. Owens and A. Chotai **D** p45
Sensitivity reduced design of discrete linear regulator with prescribed degree of stability. M. Gopal and J.G. Ghodekar **D** p261
Stability of amorphous-silicon thin-film transistors. M.J. Powell and D.H. Nicholls **I** p2
Transient stability analysis of electric power systems by the method of tangent hypersurfaces. P.A. Cook and A.M. Eskicioglu **C** p183

STANDARDISATION AND STANDARDS

BEAMA,BSI,IEE—the interface. G.R.C. McDowell **A** p31

STEPPING MOTORS

Optimal control of a voltage-driven stepping motor. D.I. Jones and J.W. Finch **D** p175

SURFACE-ACOUSTIC-WAVE DEVICES (SAW)

Sources based on switched hybrid SAW oscillators. S. Neylon and V. Wilkinson **H** p473

SWITCHES AND SWITCHING THEORY

A new pole-changing winding using star/star-delta switching. P. Chidambaram, A.A. Kamath, M. Subbiah and M.R. Krishnamurthy **B** p130
Design of multistage interconnection networks. A.K. Sood **E** p109
Theory of the triangular-barrier switch. S.E-D. Habib and K. Board **I** p292

SYNCHRONOUS GENERATORS

Microprocessor-based identification systems applied to synchronous generators with voltage regulators. R.D. Lang, H. Yee and M.A. Hutchinson **C** p257
The process of self excitation in induction generators. J.M. Elder, J.T. Boys and J.L. Woodward **B** p103

SYNCHRONOUS MOTORS

Determination of model parameters of synchronous machines. I.M. Canay **B** p86
Double-disc alternator with AC-side excitation. P.D. Evans and J.F. Eastham **B** p95

SYSTEM PROTECTION

Computer prediction of IDMT relay settings and performance for interconnected power systems. J.P. Whiting and D. Lidgate **C** p139
New ultra-speed distance protection using finite-transform techniques. A.T. Johns and M.A. Martin **C** p127

TELECOMMUNICATION

Carrier phase predictors for high-speed data transmission systems. H.D. Mohammed **F** p173

TELEPHONE EXCHANGES AND NETWORKS

Experiments with packet switching of voice traffic. P.N. Clarke and L.F. Turner **G** p105

TELEVISION

Quality rating of television pictures: comparison of results obtained by laboratories in different countries. J.W. Allnatt and R.M. Collins **F** p289
Subjective quality of a 70 Mbits digital codec for colour television. M.W. Redstall and T.A. White **F** p477

THYRISTORS

Application of controlled flywheeling to the recovery bridge of a static Kramer drive. W. Drury, B.L. Jones and J.E. Brown **B** p73
Microprocessor control of triac cycloconvertor. S.K. Tso and C.C. Leung **B** p193

TRANSDUCERS

Review of transducer application of polyvinylidene fluoride. H.R. Gallantree **I** p219

TRANSFORMERS

Digital simulator of transformer windings subject to impulse voltage. S. Cristina, M. D'Amore and M. Salerno **C** d91
Discrete Fourier transform processor based on the prime-factor algorithm. B. Arambepola **G** p138
Energy-transfer mechanism and current waveforms of parametric transformers. E.S. Tez and I.R. Smith **B** p181
Fault location for transmission lines with current-transformer saturation. G.G. Richards and O.T. Tan **C** p22
Harmonic reduction in the static var compensator by sequence control of transformer taps. H.K. Patel and G.K. Dubey **C** p300
Mathematical model and characteristics of parametric transformers. I.R. Smith and E.S. Tez **B** d69
Two-stage current transformers in differential calibration circuits. P.J. Betts **A** p324

TRANSIENTS

Digital simulator of transformer windings subject to impulse voltage. S. Cristina, M. D'Amore and M. Salerno **C** d91
Discriminative response of distance protection in reverse-fault operation. W.D. Humpage and K.P. Wong **C** p217
Hilbert transform in impulse functions of power-transmission-line electromagnetic transient model. W.D. Humpage, K.P. Wong and T.T. Nguyen **C** p266
Measurement of thermal transients in semiconductor power devices and circuits. P.W. Webb **I** p153
Simplified analysis of transient due to fault initiation on double-ended overhead and underground transmission lines. K. Matsuura and H. Kinoshita **C** p75
Transient stability analysis of electric power systems by the method of tangent hypersurfaces. P.A. Cook and A.M. Eskicioglu **C** p183
z-transform transient analysis in power systems. W.D. Humpage **C** d227

TRANSISTORS

AC model for MOS transistors from transient-current computations. K.Y. Tong **I** p33
High-density one-device dynamic MOS memory cells. Kiyoo. Itoh and Hideo. Sunami **I** p127
Modified strong-inversion potential for accurate modelling of long-channel MOS transistors. L.J. Stenberg **I** p57
Simulation and measurement of C/V doping profiles in multilayer structures. J.E.A. Whiteaway **I** p165
Stability of amorphous-silicon thin-film transistors. M.J. Powell and D.H. Nicholls **I** p2
Two-dimensional finite-element simulation of a permeable-base transistor. A. Marty, J. Clarac, J.P. Bailbe and G. Rey **I** p24

TRANSMISSION AND DISTRIBUTION PLANT

Computerised in-situ testing of feeder protections. A.C. Webb **C** p51
Digital simulator of transformer windings subject to impulse voltage. S. Cristina, M. D'Amore and M. Salerno **C** d91
Foundation uplift resistance: the effects of foundation type and of seasonal changes in ground conditions. M.J. Vanner **C** d232
Hilbert transform in impulse functions of power-transmission-line electromagnetic transient model. W.D. Humpage, K.P. Wong and T.T. Nguyen **C** p266
State forecasting in electric power systems. A.M. Leite da Silva, M.B. Do Coutto Filho and J.F. de Queiroz **C** p237

TRANSMISSION-LINES

Hilbert transform in impulse functions of power-transmission-line electromagnetic transient model. W.D. Humpage, K.P. Wong and T.T. Nguyen **C** p266
Prediction of surge propogation influenced by corona and skin effect. C. Gray, A. Timotin and D. Cristescu **A** p264

TRANSMITTERS

A new class of passive subharmonic transponders. E. Eshraghian and P.H. Cole **G** p45

TROPOSPHERIC PROPAGATION

Performance of an interferometer angle-measuring receiver against non-line-of-sight transmitters. A.R. Cusdin and N.C.W. Fane **F** p695
Propagation due to tropospheric inhomogeneities. L. Boithias and J. Battesti **F** p657
Tropospheric effects on line-of-sight links at 36 GHz and 55 GHz. F.C. Medeiros Filho, D.A.R. Jayasuriya and R.S. Cole **F** p679

TURBOGENERATORS

Currents flowing in the stator-core frames of large electrical machines. P.J. Tavner and J. Penman **C** p273
Dynamics of wind turbines. A.D. Garrad **A** p523

UNDERGROUND CABLES

Modal propagation and sensitivity of modal quantities in crossbonded cables. C.S. Indulkar, Parmod Kumar and D.P. Koihari **C** p278

VEHICLES AND TRANSPORTATION

Chassis dynamics related to a low-cost magnetically suspended vehicle. V.M. Gondhalekar and B.V. Jayawant **D** p83

VERY LARGE SCALE INTEGRATION

Comparison of MOS processes for VLSI. H.E. Oldham and S.L. Partridge **I** p94
Modelling of small MOS devices and device limits. P.K. Chatterjee, Ping Yang and Hisashi Shichijo **I** p105

New hot-carrier injection and device degradation in submicron MOSFETs. E. Takeda, Y. Nakagome, H. Kume and S. Asai I p144
Transit and storage times of bipolar transistors in a VLSI environment. S.S. Rofail I p151

VOICE COMMUNICATION

Carrier phase predictors for high-speed data transmission systems. H.D. Mohammed F p173
Data transmission over VHF and UHF land mobile radio channels. P.J. Cadman and R.L. Brewster F p527
Experiments with packet switching of voice traffic. P.N. Clarke and L.F. Turner G p105
Hybrid frequency-domain coding of speech signals. S.W. Foo and L.F. Turner F p459

VOLTAGE REGULATORS

Microprocessor-based identification systems applied to synchronous generators with voltage regulators. R.D. Lang, H. Yee and M.A. Hutchinson C p257

WAVEGUIDES

2000 W mean-power X-band waveguide junction circulator using composite turnstile resonator. J. Helszajn and J. Sharp H p375
Analysis of an end junction between a coaxial waveguide,with a hollow inner,and a circular cylindrical waveguide. A.J. Sangster and D.J. McIntosh H p297
Analysis of fin-line tapers and transitions. A.M.K. Saad H p230
Asymptotic theory of vector modes in inhomogeneous optical fibres: uncladded fibres. M. Hashimoto H p261
Coupling between prism and rectangular optical waveguide. D.K. Wang and P.J.R. Laybourn H p255
Coupling between two conical horns placed side by side. M.S. Narasimhan and K.H. Prasad H p358
Dispersion characteristics of monomode optical-fibre systems. M.J. Bennett H p309
Experimental study of orthomode couplers for use in power combining and distribution. J. Clarke and D.J. Cracknell H p305
Field distribution in a cylindrical shell of finite length and thickness due to an external current filament. E.E. Kriezis and D.P. Chrissoulidis A p45
Finite-element solution of three-dimensional electromagnetic problems. J.P. Webb, G.L. Maile and R.L. Ferrari H p153
Microbending loss in optical waveguides. J.M. Arnold and R. Allen H p331
Radiation from graded-index single-mode fibres. C.D. Hussey H p225
Scalar mode analysis of parabolic index fibres using continued fractions. O.G. Leminger H p290
Scattering matrix of junctions between rectangular waveguides. R. DeSmedt and B. Denturck H p183
Simplified computation of coplanar waveguide with finite conductor thickness. K. Koshiji, E. Shu and S. Miki H p315
Studies on certain modified Luneberg lenses. M. Barakat and L. Shafai H p363
TEM horn antenna: input reflection characteristics in transmission. S. Evans and F.N. Kong H p403
Temperature distribution in uniform and layered microwave absorbers in waveguide. I.A. Ali and L.J. Auchterlonie H p236

WIND POWER

Development of the 7.3 MW MOD-5A wind-turbine generator system. R.S. Barton and W.C. Lucas A p537
Dynamics of an isolated power system supplied from diesel and wind. A.J. Tsitsovits and L.L. Freris A p587
Dynamics of wind turbines. A.D. Garrad A p523
Environmental aspects of large-scale wind-power systems in the UK. A. Robson A p620
Estimation of low-level winds from upper-air data. M. Bennett, P.M. Hamilton and D.J. Moore A p517
Modelling and control of a wind-driven induction generator for water storage heating. S.A. Daly, A.M. de Paor and R.J. Simpson A p596
Review of wind/diesel strategies. D.G. Infield, G.W. Slack, N.H. Lipman and P.J. Musgrove A p613
Risks associated with wind-turbine blade failures. J.F. Macqueen, J.F. Ainslie, D.J. Milborrow, D.M. Turner and D.T. Swift-Hook A p574
Status of Boeing wind-turbine systems. J.E. Lowe and W. Wiesner A p531
The HWP-300 wind turbine. P. Jamieson and D. McLeish A p550
Vertical-axis wind turbine development in Canada. R.J. Templin and R.S. Rangi A p555
Wake and cluster research: past, present and future. D.J. Milborrow A p566
Wake and performance measurements on the Lawson-Tancred 17 m horizontal-axis windmill. G.J. Taylor A p604
Wake structure measurements at the MOD-2 cluster test facility at Goodnoe Hills, Washington. T.G. Zambrano and G.W. Gyatt A p562
Wind energy conversion—an introduction. P.J. Musgrove A p506
Wind power (Editorial). D.T. Swift-Hook and R.H. Taylor A p505

Book reviews

Active filter design C. Chen G p224
Advanced millimetre wave technology D.J. Colliver (Ed.) H p275
Analog-digital and digital-analog conversion B. Loriferne G p68
Computer modelling of electrical power systems J. Arrillaga, C.P. Arnold and B.J. Harker C p235
Computer science—a modern introduction Les Goldschlager and Andrew Lister E p18
Computer system architecture M. Morris Mano E p138
Computer vision D.H. Ballard and C.M. Brown E p97
Deep levels in semiconductors M. Jaros I p47
Design review methodology for a data base environment W.H. Inmon: L.J. Friedman E p189
Digital control using microprocessors Paul Katz E p48
Digital logic design B. Holdsworth E e24
Elementary compatibility, formal languages and automata R. McNaughton E p48
Flat radiating dipoles and applications to arrays G. Dubost H p428
Fundamentals handbook of electrical and computer engineering: Vol 1. Circuits, fields and electronics Sheldon S.L. Chang E p138
GaInAsP alloy semiconductors. T.P. Pearsall I p264
Gyrotropic waveguides R.A. Waldron H p500
Handbook of measurement science P.H. Sydenham (Ed.) A p103
High-frequency amplifiers Ralph S. Carson G p164
High-temperature superconductivity V.L. Ginzburg and D.A. Kirzhnits (Eds.) A p368
Human performance engineering: a guide for systems designers R.W. Bailey A p104
Logic design and computer organisation: M.H. Lewin E p202
MC6800: 16-bit microprocessor users manual, 3rd Edn E p99
MOS (metal oxide semiconductors) physics and technology E.R. Nicollian and J.R. Brews I p47
Microcomputer system design M.J. Flynn and N.R. Harris E p98
Microwave devices J.T. Coleman H p427
Microwave engineering and applications Om.P. Gandhi H p275
Numerical analysis for semiconductor devices Mamoru Kurata I p66
Optical fiber transmission systems S.D. Personick H p427
Optimum designs for InGaAsP/InP ($\lambda = 1.3\mu m$) planoconvex waveguide lasers under lasing conditions M. Ueno, R. Lang, S. Matsumoto, H. Kawano, T. Furuse and I. Sakuma I e79
Power Electronics C.W. Lander B p320
Principles of computer speech I.H. Witten E p139
Putnam's power from the wind—2nd Edn Gerald W. Koeppl C p59
Solid state devices and integrated circuits W.D. Cooper and H.B. Weisbecker I p60
Stepping motors: a guide to modern theory and practice P.P. Acarnley B p192
TEAPACK users' manual-mathematical subroutines for numerical methods R.L. Johnston E p47
Using the Unix system Richard Gauthier E p98
Wind energy for the eighties N.H. Lipmann, P.J. Musgrove and G.W.W. Pontin C p59
Z-transform electromagnetic transient analysis in high-voltage networks W.D. Humpage B p456

Conference reports

13th IEEE international symposium on multipled-valued logic (ISMVL 83) S.L. Hurst E p148
6th Symposium on computer arithmetic E p207
A look at design and safety in the past H. Abbott A p297
Better television by satellite—receiver and modulation techniques. (IEE Colloquium report) M. Harman and E. Johnston F p576
Conservation through design M.R. Lloyd A p360
Consumer appliance design for inherent safety S.H. Green A p235
Contribution of labelling, instructions and warnings to safety in design F.W. Stacey A p296
Design for safety today—the Metro D.R. Gebbels A p298
Design for safety G.E.P. Constable A p292
Design for safety J. Butcher A p292
Energy content and availability of metals P.F. Chapman A p354
Fourth international conference on metering, apparatus and tariffs for electricity supply D.F. Crawley C p93
Hazard analysis and risk assessment: aids to the evaluation of product safety D. Boswell A p293
IEE Colloquium on digital filtering of video signals. (Conference report) D.E. Pearson F p191
IEE Colloquium on the global INTELSAT VI satellite system. (Conference report) E.C. Johnston F p191
IEEE Winter power meeting. (Conference report.) D.C. Macdonald and B.J. Cory C p150
Industrial energy usage R.C. Bending A p353
Monitoring and control using energy management systems M.D. Clapp A p357
Plant life monitoring and extension R.H. Carpenter A p362
Practical energy management C.D.E. Jones A p356
RADAR - 82 (Conference report) J.G. Schoenenberger F p190
Resource conservation for the electrical engineer. (Colloquium report) J.F. Gamlin (Ed.) A p350
The contribution of the British Standards Institution D.G. Spickernell A p299
UK. energy policy-issues and priorities J.H. Chesshire A p350
Use of sophisticated systems to improve safety in design L. Burgess A p296

Index

IEE Proceedings Part I
Solid-State and Electron Devices
Vol. 130, 1983

ABBREVIATIONS

- p paper, address or lecture
- d discussion on a paper
- a abstract of paper or address
- e errata
- s synopsis of a paper published in full in another Part of the *IEE Proceedings*

Author index

A

Al-Mudares, M.A.R., and Foulds, K.W.H. Physical explanation of GaAs MESFET I/V characteristics p175
André T. Salama, C., and Haque-Ahmed, Sufia see Haque-Ahmed, Sufia
Asai, S., Takeda, E., Nakagome, Y., and Kume, H. see Takeda, E.

B

Bailbe, J.P., Marty, A., Clarac, J., and Rey, G. see Marty, A.
Baker, S., Roberts, G.G., and Petty, M.C. Phthalocyanine Langmuir-Blodgett-film gas detector p260
Beinvogl, W., Müller, W., Risch, L., and Sigusch, R. see Müller, W.
Bloor, D., and Movaghar, B. Conducting polymers p225
Board, K., and Habib, S.E.-D. see Habib, S.E.-D.
Brown, D.J. Empirical model for gallium arsenide MESFETs p29
Bryant, F.J., Qadeer, A., and Reed, J. $Pb_{1-x}Sn_xSe/PbSe$ heterostructure lasers p287
Bryant, F.J., and Krier, A. Low-voltage direct-current electroluminescence in ZnS:RE thin films p160

C

Carroll, J.E., and Everard, J.K.A. see Everard, J.K.A.
Carter, R.G. Representation of coupled-cavity slow-wave structures by equivalent circuits p67
Chan, D.S.H., Chua, S.J., and Leong, M.S. see Chua, S.J.
Chatterjee, P.K., Yang, Ping, and Shichijo, Hisashi Modelling of small MOS devices and device limits: p105
Chua, S.J., Leong, M.S., and Chan, D.S.H. Correspondence: Lateral current spreading in stripe-contact semiconductor lasers p302
Clarac, J., Marty, A., Bailbe, J.P., and Rey, G. see Marty, A.

E

Elmasry, M.I. VLSI. (Editorial) p93
Everard, J.K.A., and Carroll, J.E. Practical comparisons of optoelectronic sampling systems and devices p5

F

Falkner, A.H. Novel accelerator energy convertor p192
Foulds, K.W.H., and Al-Mudares, M.A.R. see Al-Mudares, M.A.R.

G

Gallantree, H.R. Review of transducer application of polyvinylidene fluoride p219
Goodman, C.H.L. Direct-gap group IV semiconductors based on tin e46
Gowar, J., and Pathak, V.K. see Pathak, V.K.

H

Habib, S.E.-D., and Board, K. Theory of the triangular-barrier switch p292
Haque-Ahmed, Sufia, and André T. Salama, C. Depletion mode MOSFET modelling for CAD p281
Heller, H.G. Organic fatigue-resistant photochromic imaging materials p209

I

Itoh, Kiyoo, and Sunami, Hideo. High-density one-device dynamic MOS memory cells p127

J

Jennings, B.R. Molecular electro-optics p212

K

Keen, N.J. Mott-barrier mixer diodes with improved semiconductor profiles for cooled operation at submillimetre wavelengths p171
Krier, A., and Bryant, F.J. see Bryant, F.J.
Kumar, U. Comparison between two-dimensional short-channel MOSFET models p37
Kume, H., Takeda, E., Nakagome, Y., and Asai, S. see Takeda, E.

L

Ledwith, A. Chemistry of polymeric resists useful in microlithography p245
Leigh, P.A. Selenium implantation into GaAs for integrated circuits p265
Leong, M.S., Chua, S.J., and Chan, D.S.H. see Chua, S.J.

M

Machaicy, J. Static model of DH laser p61
Marty, A., Clarac, J., Bailbe, J.P., and Rey, G. Two-dimensional finite-element simulation of a permeable-base transistor p24
Mavor, J. (Editorial) p1
Minasian, R.A. Modelling DC characteristics of dual-gate GaAs MESFETs p182
Minasian, R.A. Power MOSFET dynamic large-signal model p73
Moglestue, C. Negative differential resistivity in field-effect transistors p275
Movaghar, B., and Bloor, D. see Bloor, D.
Müller, W., Beinvogl, W., Risch, L., and Sigusch, R. Submicron MOS process with 10:1 optical-projection printing and anisotropic dry etching p136

N

Nakagome, Y., Takeda, E., Kume, H., and Asai, S. see Takeda, E.
Nicholls, D.H., and Powell, M.J. see Powell, M.J.

O

Oldham, H.E., and Partridge, S.L. Comparison of MOS processes for VLSI p94

P

Partridge, S.L., and Oldham, H.E. see Oldham, H.E.
Pathak, V.K., and Gowar, J. Numerical solutions for surface electric field distributions in avalanching *p-i-n* power diodes p17
Peterson, I.R. Langmuir-Blodgett electron-beam resists p252
Petty, M.C., Baker, S., and Roberts, G.G. see Baker, S.
Powell, M.J., and Nicholls, D.H. Stability of amorphous-silicon thin-film transistors p2

Q

Qadeer, A., Bryant, F.J., and Reed, J. see Bryant, F.J.

R

Reed, J., Bryant, F.J., and Qadeer, A. see Bryant, F.J.
Rey, G., Marty, A., Clarac, J., and Bailbe, J.P. see Marty, A.
Risch, L., Müller, W., Beinvogl, W., and Sigusch, R. see Müller, W.
Roberts, G.G. Molecular electronics.(Editorial) p197
Roberts, G.G., Baker, S., and Petty, M.C. see Baker, S.
Rofail, S.S. Transit and storage times of bipolar transistors in a VLSI environment p151

S

Salmer, G. Physical frequency limitations of 2-terminal devices p80
Salomone, G., and Torelli, G. see Torelli, G.
Shanks, I.A. Liquid-crystal displays: an established example of molecular electronics p198
Shichijo, Hisashi, Chatterjee, P.K., and Yang, Ping see Chatterjee, P.K.
Sibbald, A. Chemical-sensitive field-effect transistors p233
Sigusch, R., Müller, W., Beinvogl, W., and Risch, L. see Müller, W.
Stenberg, L.J. Modified strong-inversion potential for accurate modelling of long-channel MOS transistors p57
Sunami, Hideo, and Itoh, Kiyoo see Itoh, Kiyoo

T

Takeda, E., Nakagome, Y., Kume, H., and Asai, S. New hot-carrier injection and device degradation in submicron MOSFETs p144
Tong, K.Y. AC model for MOS transistors from transient-current computations p33
Torelli, G., and Salomone, G. Integrated protection circuits against the forward biasing of the input junction in digital MOS ICs p187
Tredgold, R.H., and Winter, C.S. see Winter, C.S.

W

Webb, P.W. Measurement of thermal transients in semiconductor power devices and circuits p153
Webb, P.W. Numerical simulation of microstrip Baritt oscillators p297
Whiteaway, J.E.A. Simulation and measurement of C/V doping profiles in multilayer structures p165
Winter, C.S., and Tredgold, R.H. Control of Schottky-diode-barrier height by Langmuir-Blodgett monolayers p256

Y

Yang, Ping, Chatterjee, P.K., and Shichijo, Hisashi see Chatterjee, P.K.

Subject index

BIPOLAR TRANSISTORS

Transit and storage times of bipolar transistors in a VLSI environment. S.S. Rofail p151

CIRCUIT THEORY AND DESIGN

Comparison of MOS processes for VLSI. H.E. Oldham and S.L. Partridge p94

COMPUTER-AIDED DESIGN

Depletion mode MOSFET modelling for CAD. Sufia Haque-Ahmed and C. André T. Salama p281

DIODES

Control of Schottky-diode-barrier height by Langmuir-Blodgett monolayers. C.S. Winter and R.H. Tredgold p256
Mott-barrier mixer diodes with improved semiconductor profiles for cooled operation at submillimetre wavelengths. N.J. Keen p171
Numerical solutions for surface electric field distributions in avalanching *p-i-n* power diodes. V.K. Pathak and J. Gowar p17
$Pb_{1-x}Sn_xSe/PbSe$ heterostructure lasers. F.J. Bryant, A. Qadeer and J. Reed p287
Theory of the triangular-barrier switch. S.E.-D. Habib and K. Board p292

DOPING

Low-voltage direct-current electroluminescence in ZnS : RE thin films. F.J. Bryant and A. Krier p160
Optimum designs for InGaAsP/InP ($\lambda = 1.3\mu m$) planoconvex waveguide lasers under lasing conditions M. Ueno, R. Lang, S. Matsumoto, H. Kawano, T. Furuse and I. Sakuma e79
Physical explanation of GaAs MESFET I/V characteristics. M.A.R. Al-Mudares and K.W.H. Foulds p175
Simulation and measurement of C/V doping profiles in multilayer structures. J.E.A. Whiteaway p165

ELECTRON DEVICES

Physical explanation of GaAs MESFET I/V characteristics. M.A.R. Al-Mudares and K.W.H. Foulds p175
Physical frequency limitations of 2-terminal devices. G. Salmer p80
Representation of coupled-cavity slow-wave structures by equivalent circuits. R.G. Carter p67

ENERGY CONVERSION AND STORAGE

Novel accelerator energy convertor. A.H. Falkner p192

EPITAXY

Direct-gap group IV semiconductors based on tin. C.H.L. Goodman e46
Optimum designs for InGaAsP/InP ($\lambda = 1.3\mu m$) planoconvex waveguide lasers under lasing conditions M. Ueno, R. Lang, S. Matsumoto, H. Kawano, T. Furuse and I. Sakuma e79

FIELD-EFFECT TRANSISTORS

Chemical-sensitive field-effect transistors. A. Sibbald p233
Comparison between two-dimensional short-channel MOSFET models. U. Kumar p37
Depletion mode MOSFET modelling for CAD. Sufia Haque-Ahmed and C. André T. Salama p281
Empirical model for gallium arsenide MESFETs. D.J. Brown p29
Modelling DC characteristics of dual-gate GaAs MESFETs. R.A. Minasian p182
Modelling of small MOS devices and device limits. P.K. Chatterjee, Ping Yang and Hisashi Shichijo p105
Negative differential resistivity in field-effect transistors. C. Moglestue p275
New hot-carrier injection and device degradation in submicron MOSFETs. E. Takeda, Y. Nakagome, H. Kume and S. Asai p144
Physical explanation of GaAs MESFET I/V characteristics. M.A.R. Al-Mudares and K.W.H. Foulds p175
Power MOSFET dynamic large-signal model. R.A. Minasian p73
Selenium implantation into GaAs for integrated circuits. P.A. Leigh p265

INTEGRATED CIRCUITS

Integrated protection circuits against the forward biasing of the input junction in digital MOS ICs. G. Torelli and G. Salomone p187
Selenium implantation into GaAs for integrated circuits. P.A. Leigh p265

LASERS

$Pb_{1-x}Sn_xSe/PbSe$ heterostructure lasers. F.J. Bryant, A. Qadeer and J. Reed p287

MEASUREMENT AND MEASURING

Measurement of thermal transients in semiconductor power devices and circuits. P.W. Webb p153
Simulation and measurement of C/V doping profiles in multilayer structures. J.E.A. Whiteaway p165

METAL-INSULATOR-SEMICONDUCTOR STRUCTURES

Control of Schottky-diode-barrier height by Langmuir-Blodgett monolayers. C.S. Winter and R.H. Tredgold p256
Modified strong-inversion potential for accurate modelling of long-channel MOS transistors. L.J. Stenberg p57

METAL-OXIDE-SEMICONDUCTOR STRUCTURES

AC model for MOS transistors from transient-current computations. K.Y. Tong p33
Comparison between two-dimensional short-channel MOSFET models. U. Kumar p37
Comparison of MOS processes for VLSI. H.E. Oldham and S.L. Partridge p94
Depletion mode MOSFET modelling for CAD. Sufia Haque-Ahmed and C. André T. Salama p281
High-density one-device dynamic MOS memory cells. Kiyoo Itoh and Hideo Sunami p127
Integrated protection circuits against the forward biasing of the input junction in digital MOS ICs. G. Torelli and G. Salomone p187
Modelling of small MOS devices and device limits. P.K. Chatterjee, Ping Yang and Hisashi Shichijo p105
New hot-carrier injection and device degradation in submicron MOSFETs. E. Takeda, Y. Nakagome, H. Kume and S. Asai p144
Power MOSFET dynamic large-signal model. R.A. Minasian p73
Submicron MOS process with 10:1 optical-projection printing and anisotropic dry etching. W. Müller, W. Beinvogl, L. Risch and R. Sigusch p136

MICROWAVE CIRCUITS AND NETWORKS

Novel accelerator energy convertor. A.H. Falkner p192
Numerical simulation of microstrip Baritt oscillators. P.W. Webb p297
Physical frequency limitations of 2-terminal devices. G. Salmer p80
Representation of coupled-cavity slow-wave structures by equivalent circuits. R.G. Carter p67

MODELLING

AC model for MOS transistors from transient-current computations. K.Y. Tong p33
Comparison between two-dimensional short-channel MOSFET models. U. Kumar p37
Empirical model for gallium arsenide MESFETs. D.J. Brown p29
Modified strong-inversion potential for accurate modelling of long-channel MOS transistors. L.J. Stenberg p57
Numerical solutions for surface electric field distributions in avalanching *p-i-n* power diodes. V.K. Pathak and J. Gowar p17
Power MOSFET dynamic large-signal model. R.A. Minasian p73
Static model of DH laser. J. Machaicy p61
Two-dimensional finite-element simulation of a permeable-base transistor. A. Marty, J. Clarac, J.P. Bailbe and G. Rey p24

NOISE AND INTERFERENCE

Mott-barrier mixer diodes with improved semiconductor profiles for cooled operation at submillimetre wavelengths. N.J. Keen p171

OPTICAL PROCESSING

Submicron MOS process with 10:1 optical-projection printing and anisotropic dry etching. W. Müller, W. Beinvogl, L. Risch and R. Sigusch p136

OPTOELECTRONICS

Liquid-crystal displays: an established example of molecular electronics. I.A. Shanks p198
Molecular electro-optics. B.R. Jennings p212
Molecular electronics.(Editorial). G.G. Roberts p197
Organic fatigue-resistant photochromic imaging materials. H.G. Heller p209
Practical comparisons of optoelectronic sampling systems and devices. J.K.A. Everard and J.E. Carroll p5

OSCILLATORS

Numerical simulation of microstrip Baritt oscillators. P.W. Webb p297

REVIEWS OF PROGRESS

Langmuir-Blodgett electron-beam resists. I.R. Peterson p252
Liquid-crystal displays: an established example of molecular electronics. I.A. Shanks p198
Review of transducer application of polyvinylidene fluoride. H.R. Gallantree p219

SCHOTTKY-BARRIER DEVICES

Two-dimensional finite-element simulation of a permeable-base transistor. A. Marty, J. Clarac, J.P. Bailbe and G. Rey p24

SEMICONDUCTOR DEVICES AND MATERIALS

AC model for MOS transistors from transient-current computations. K.Y. Tong p33
Chemical-sensitive field-effect transistors. A. Sibbald p233
Chemistry of polymeric resists useful in microlithography. A. Ledwith p245
Comparison between two-dimensional short-channel MOSFET models. U. Kumar p37
Comparison of MOS processes for VLSI. H.E. Oldham and S.L. Partridge p94
Conducting polymers. D. Bloor and B. Movaghar p225
Control of Schottky-diode-barrier height by Langmuir-Blodgett monolayers. C.S. Winter and R.H. Tredgold p256
Direct-gap group IV semiconductors based on tin. C.H.L. Goodman e46
Empirical model for gallium arsenide MESFETs. D.J. Brown p29
High-density one-device dynamic MOS memory cells. Kiyoo Itoh and Hideo Sunami p127
Low-voltage direct-current electroluminescence in ZnS:RE thin films. F.J. Bryant and A. Krier p160
Measurement of thermal transients in semiconductor power devices and circuits. P.W. Webb p153
Modelling DC characteristics of dual-gate GaAs MESFETs. R.A. Minasian p182
Modified strong-inversion potential for accurate modelling of long-channel MOS transistors. L.J. Stenberg p57
Molecular electronics.(Editorial). G.G. Roberts p197
Mott-barrier mixer diodes with improved semiconductor profiles for cooled operation at submillimetre wavelengths. N.J. Keen p171
Negative differential resistivity in field-effect transistors. C. Moglestue p275
New hot-carrier injection and device degradation in submicron MOSFETs. E. Takeda, Y. Nakagome, H. Kume and S. Asai p144

Numerical solutions for surface electric field distributions in avalanching *p-i-n* power diodes. V.K. Pathak and J. Gowar p17
$Pb_{1-x}Sn_xSe$/PbSe heterostructure lasers. F.J. Bryant, A. Qadeer and J. Reed p287
Phthalocyanine Langmuir-Blodgett-film gas detector. S. Baker, G.G. Roberts and M.C. Petty p260
Physical explanation of GaAs MESFET I/V characteristics. M.A.R. Al-Mudares and K.W.H. Foulds p175
Physical frequency limitations of 2-terminal devices. G. Salmer p80
Power MOSFET dynamic large-signal model. R.A. Minasian p73
Practical comparisons of optoelectronic sampling systems and devices. J.K.A. Everard and J.E. Carroll p5
Selenium implantation into GaAs for integrated circuits. P.A. Leigh p265
Simulation and measurement of C/V doping profiles in multilayer structures. J.E.A. Whiteaway p165
Stability of amorphous-silicon thin-film transistors. M.J. Powell and D.H. Nicholls p2
Theory of the triangular-barrier switch. S.E.-D. Habib and K. Board p292
Two-dimensional finite-element simulation of a permeable-base transistor. A. Marty, J. Clarac, J.P. Bailbe and G. Rey p24

SEMICONDUCTOR LASERS

Lateral current spreading in stripe-contact semiconductor lasers. S.J. Chua, M.S. Leong and D.S.H. Chan p302
Optimum designs for InGaAsP/InP ($\lambda = 1.3\mu m$) planoconvex waveguide lasers under lasing conditions M. Ueno, R. Lang, S. Matsumoto, H. Kawano, T. Furuse and I. Sakuma e79
Practical comparisons of optoelectronic sampling systems and devices. J.K.A. Everard and J.E. Carroll p5
Static model of DH laser. J. Machaicy p61

SIMULATION

Modelling DC characteristics of dual-gate GaAs MESFETs. R.A. Minasian p182
Numerical simulation of microstrip Baritt oscillators. P.W. Webb p297

STABILITY

Stability of amorphous-silicon thin-film transistors. M.J. Powell and D.H. Nicholls p2

SWITCHES AND SWITCHING THEORY

Theory of the triangular-barrier switch. S.E.-D. Habib and K. Board p292

TRANSDUCERS

Review of transducer application of polyvinylidene fluoride. H.R. Gallantree p219

TRANSIENTS

Measurement of thermal transients in semiconductor power devices and circuits. P.W. Webb p153

TRANSISTORS

AC model for MOS transistors from transient-current computations. K.Y. Tong p33
High-density one-device dynamic MOS memory cells. Kiyoo Itoh and Hideo Sunami p127
Modified strong-inversion potential for accurate modelling of long-channel MOS transistors. L.J. Stenberg p57
Simulation and measurement of C/V doping profiles in multilayer structures. J.E.A. Whiteaway p165
Stability of amorphous-silicon thin-film transistors. M.J. Powell and D.H. Nicholls p2
Two-dimensional finite-element simulation of a permeable-base transistor. A. Marty, J. Clarac, J.P. Bailbe and G. Rey p24

VERY LARGE SCALE INTEGRATION

Comparison of MOS processes for VLSI. H.E. Oldham and S.L. Partridge p94
Modelling of small MOS devices and device limits. P.K. Chatterjee, Ping Yang and Hisashi Shichijo p105
New hot-carrier injection and device degradation in submicron MOSFETs. E. Takeda, Y. Nakagome, H. Kume and S. Asai p144
Transit and storage times of bipolar transistors in a VLSI environment. S.S. Rofail p151

Book reviews

Deep levels in semiconductors M. Jaros p47
GaInAsP alloy semiconductors. T.P. Pearsall p264
MOS(metal oxide semiconductors) physics and technology E.R. Nicollian and J.R. Brews p47
Numerical analysis for semiconductor devices Mamoru Kurata p66
Solid state devices and integrated circuits W.D. Cooper and H.B. Weisbecker p60